

CAI  
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- 47R26



APPENDIX "D"



*Canada* AIR TRANSPORT BOARD

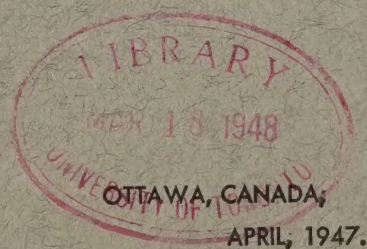
REPORT

ON

REVIEW OF LICENCES RESPECTING COMMERCIAL AIR SERVICES  
PURSUANT TO SECTION 13 OF THE AERONAUTICS ACT

LICENCES IN

GROUP 4—NORTHERN ALBERTA, PEACE RIVER DISTRICT (B.C.)  
AND NORTH WEST TERRITORIES









CAI TAT6  
-47R26

GROUP IV  
ALBERTA & N.W. TERRITORIES

ERRATA

- Pages 3 & 9 - Under Licence CTC (AT) 68  
after "Yukon Southern Air Transport" add the word "Limited"
- Page 14 - Chesterfield, N.W.T. )  
" 15 - Cold Lake, Alta. )  
" 20 - Fitzgerald, Alta. )  
" 21 - Fort Chipewyan, Alta. ) after the word "Repairs"  
" 26 - Lac La Biche, Alta. )  
" 27 - Lake Newell, Alta. ) insert the word "Nil"  
" 29 - Medicine Hat, Alta. )  
" 30 - Peace River, Alta. )  
" 32 - Wager, N.W.T. )
- Page 34 - In the second line of the first paragraph  
for "was" read "were".
- Page 35 - In the schedule  
opposite "Rocher River" for "Lv" read "Ar".
- Page 37 - At the end of the second line of the third paragraph  
after the words "one is" insert the word "served".
- Page 44 - In the last sentence of the fourth paragraph  
for "the alternative" read "the only alternative".
- Page 60 - In the second and fourth lines of the fourth paragraph  
for "draw" read "drawn".



GROUP 1V - ALBERTA & N.W. TERRITORIES

SECTION 1

- (1) The licences covered by this review in Group 4 are as follows:

Licence No. CTC(AT)27

Operator: Canadian Airways Limited

Route: Edmonton, Lac la Biche, McMurray, Bitumount, Chipewyan, Fitzgerald, in the Province of Alberta; Fort Smith, Rocher River, Taltson River, Resolution, Hay River, Providence, Simpson, Liard, in the Northwest Territories; Nelson Forks, Fort Nelson, in the Province of British Columbia; Wrigley, Norman, Good Hope, Arctic Red River, McPherson, Aklavik, in the Northwest Territories.

Licence No. CTC(AT)28

Operator: Canadian Airways Limited

Route: Edmonton, Lac la Biche, South Wabiskaw Lake, North Wabiskaw Lake, Waterways, McMurray, Embarras Portage, Chipewyan, in the Province of Alberta; Goldfields in the Province of Saskatchewan; Fitzgerald, in the Province of Alberta; Fort Smith, Resolution, Outpost Island, Yellowknife, Gordon Lake, Rae, Cameron Bay (Port Radium) and/or Labine Point, Coppermine, in the Northwest Territories.

Licence No. CTC(AT)33

Operator: MacKenzie Air Services Limited

Route: Edmonton, Lac la Biche, South Wabiskaw Lake, North Wabiskaw Lake, McMurray, Bitumount, Embarras, Chipewyan, in the Province of Alberta; Fort Smith, in the



THE UNIVERSITY OF CHICAGO  
DIVISION OF THE PHYSICAL SCIENCES  
DEPARTMENT OF PHYSICS  
CHICAGO, ILLINOIS 60637

TO THE EDITOR:  
I have the honor to acknowledge the receipt of your letter of the 10th inst. regarding the matter of the proposed visit of Professor [Name] to the University of Chicago. I am sorry that I am unable to provide a more definitive answer at this time, but the matter is currently under consideration by the appropriate committees. I will be sure to contact you again once a final decision has been reached.

Very truly yours,  
[Signature]  
[Name]  
[Title]  
[Department]  
[University]  
[Address]  
[City, State, Zip]

Enclosed for you are two copies of the report of the committee on the proposed visit of Professor [Name]. I hope this information is helpful. Please do not hesitate to contact me if you have any further questions or need additional information.

Northwest Territories; Goldfields,  
Fond du Lac, Stony Rapids, in the  
Province of Saskatchewan.

Licence No. CTC(AT)34

Operator: MacKenzie Air Services Limited

Route: Edmonton, South Wabiskaw Lake, North  
Wabiskaw Lake, McMurray, Chipewyan,  
Fort Vermillion, Fitzgerald, in the  
Province of Alberta, Fort Smith, Re-  
solution, Hay River, Providence,  
Simpson, Liard, Wrigley, Norman, Good  
Hope, Arctic Red River, McPherson,  
Aklavik, in the Northwest Territories.

Licence No. CTC(AT)43

Operator: MacKenzie Air Services Limited

Route: Goldfields, in the Province of Sas-  
katchewan; Yellowknife, in the  
Northwest Territories.

Licence No. CTC(AT)44


Operator: MacKenzie Air Services Limited

Route: Edmonton, Lac la Biche, McMurray,  
Embarras, Chipewyan, Fitzgerald,  
in the Province of Alberta; Fort  
Smith, Resolution, Taltson River,  
Outpost Island, Yellowknife, Gordon  
Lake, Rae, Cameron Bay (Port Radium),  
and/or Labine Point, Coppermine, in  
the Northwest Territories.

Licence No. CTC(AT)63

Operator: MacKenzie Air Service Limited

Route: Peace River, Keg River, Carcajou,  
Fort Vermillion and Red River, in the  
Province of Alberta; and Fort Smith  
and Yellowknife, in the Northwest  
Territories.



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Licence No. CTC(AT)68

Operator: Yukon Southern Air Transport

Route: Edmonton, Grande Prairie, Peace River, in the Province of Alberta; Dawson Creek, Fort St. John, Fort Nelson, Lower Post, in the Province of British Columbia; and Watson Lake, Teslin, Whitehorse, in the Yukon Territory.

(2) The history of these licences is as follows:

Licence No. CTC(AT)27

Pursuant to the provisions of the Air Transport Act 1938, Canadian Airways Limited applied to the Board of Transport Commissioners on February 10th, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods between the terminal points Edmonton, Alta and Aklavik, N.W.T. and serving the intermediate points Lac la Biche, McMurray, Chipewyan, Fitzgerald, Ft. Smith, Resolution, Hay River, Providence, Simpson, Wrigley, Norman, Good Hope, Arctic Red River, McPherson, Aklavik, Liard, Nelson Forks, Ft. Nelson and return to Edmonton.

Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT)27 on 12th June, 1939, to the company which authorized a scheduled commercial air service between Edmonton, Lac la Biche, McMurray, Chipewyan, Fitzgerald, in the Province of Alberta; Fort Smith, Resolution, Hay River, Providence, Simpson, Liard, in the Northwest Territories; Nelson Forks, Fort Nelson, in the Province of British Columbia; Wrigley, Norman, Good Hope, Arctic Red River, McPherson, Aklavik, in the Northwest Territories, after supplementary application by the company the Board of Transport Commissioners amended Licence CTC(AT)27 on August 23rd, 1939, to read Edmonton, Lac la Biche, McMurray, Bitumount, Chipewyan, Fitzgerald, in the Province of Alberta, Fort Smith, Rocher River, Taltson River, Resolution, Hay River, Providence, Simpson, Liard, in the Northwest Territories, Nelson Forks, Fort Nelson, in the Province of British Columbia, Wrigley, Norman, Good



1. Introduction

The purpose of this report is to provide a comprehensive overview of the current state of the project. It will cover the progress made since the last meeting, the challenges encountered, and the proposed solutions. The report is structured as follows: 1. Introduction, 2. Project Status, 3. Challenges, 4. Solutions, 5. Conclusion.

The following table shows the progress of the project over the last quarter.

2. Project Status

The project is currently on track and has made significant progress. The initial phase of the project, which involved the collection and analysis of data, has been completed. The next phase, which involves the development of a prototype, is currently underway. The project is expected to be completed by the end of the year.

The following table shows the progress of the project over the last quarter. The table includes the following columns: Task, Status, and Due Date. The tasks listed in the table are: Data Collection, Data Analysis, Prototype Development, and Final Report. The status of each task is indicated by a checkmark (✓) for completed, a plus sign (+) for in progress, and a minus sign (-) for not started. The due date for each task is also indicated.



Hope, Arctic Red River, McPherson, Aklavik,  
in the Northwest Territories.

On May 10th, 1944, the Board of Transport Commissioners issued a new licence CTC(AT)27 in lieu of the original licence dated June 12th, 1939.

Since the inception of the Air Transport Board, Licence CTC(AT)27 has been renewed from time to time by Order of the Board pending the review of former licences, pursuant to Part 11, Section 13, of the Aeronautics Act.

Licence No. CTC(AT)28

Pursuant to the provisions of the Air Transport Act, 1938, Canadian Airways Limited applied to the Board of Transport Commissioners on February 10th, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods between the terminal points Edmonton, Alta. and Coppermine, N.W.T. and serving the intermediate points Lac-la-Biche, S. Wabiskaw L., N. Wabiskaw L., Waterways, McMurray, Embarras Portage, Chipewyan, Goldfields, Fitzgerald, Ft. Smith, Resolution, Outport Island, Yellowknife, Gord L., Rae, Cameron Bay (Port Radium), Coppermine and return to Edmonton.

Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT)28 on June 12th, 1939, to the company which authorized a scheduled commercial air service between Edmonton, Lac la Biche, S. Wabiskaw Lake, North Wabiskaw Lake, Waterways, McMurray, Embarras Portage, Chipewyan, in the Province of Alberta; Goldfields, in the Province of Alberta; Fort Smith, Resolution, Outpost Island, Yellowknife, Gordon Lake, Rae, Cameron Bay (Port Radium), Coppermine, in the Northwest Territories; after supplementary application by the company the Board of Transport Commissioners amended Licence CTC(AT)28 on May 13th, 1940 to read Edmonton, Lac la Biche, S. Wabiskaw Lake, N. Wabiskaw Lake, Waterways, McMurray,







Embarras Portage, Chipewyan, in the Province of Saskatchewan; Fitzgerald, in the Province of Alberta; Fort Smith, Resolution, Outpost Island, Yellowknife, Gordon Lake, Rae, Camaron Bay (Port Radium) and/or Labine Point, Coppermine, in the Northwest Territories.

On May 10th, 1944, the Board of Transport Commissioners issued a new licence CTC(AT)28 in lieu of the original licence dated June 12th, 1939.

Since the inception of the Air Transport Board licence CTC(AT)28 has been renewed from time to time by Order of the Board pending the review of former licences, pursuant to Part 11, Section 13, of the Aeronautics Act.

Licence No. CTC(AT)33

Pursuant to the provisions of the Air Transport Act 1938, MacKensie Air Services Limited applied to the Board of Transport Commissioners on January 28th, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods between the terminal point Edmonton, Alberta, and serving the intermedite points Fort McMurray, Bitumount, Embarras, Fort Chipewyan, Goldfields, Fond du Lac, Fort Smith and a non-scheduled commercial air service to transport passengers and goods between the terminal points Athabasca, Lac la Biche, Calling Lake, Wabiskaw, Trout Lake Post, House River, Namur Lake, Webel Post, Stoney Rapids.

Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT)33 on July 3rd, 1939, to the company which authorized a scheduled commercial air service between Edmonton, Lac la Biche, South Wabiskaw Lake, North Wabiskaw Lake, McMurray, Bitumount, Embarras, Chipewyan, in the Province of Alberta; Fort Smith, in the Northwest Territories; Goldfields, Fond du Lac, and Stony Rapids, in the Province of Saskatchewan.

On May 30th, 1944, the Board of Transport Commissioners issued a new licence CTC(AT)33 in lieu of the original licence dated July 3rd, 1939.





Since the inception of the Air Transport Board Licence CTC(AT)33 has been renewed from time to time by Order of the Board pending the review of former licences, pursuant to Part 11, Section 13, of the Aeronautics Act.

Licence No. CTC(AT)34

Pursuant to the provisions of the Air Transport Act 1938, MacKenzie Air Services Limited applied to the Board of Transport Commissioners on February 1st, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods from the terminal point Edmonton, Alberta, and serving the intermediate points Fort McMurray, Fort Chipewyan, Fort Fitzgerald, Fort Smith, Fort Resolution, Hay River, Fort Providence, Fort Simpson, Wrigley, Fort Norman, Good Hope, Arctic Red River, McPherson, Aklavik and a non-scheduled commercial air service between Wabiskaw, Red River Post, Fort Vermillion, Hay River Post, Hay Lake, Buffalo Lake, South Nahanni, Liard, McMillan Lake, Brintnell Lake, Herschell Island, Tuktuk, Baillie Island.

Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT)34 on July 12th, 1939, to the company which authorized a scheduled commercial air service between Edmonton, S. Wabiskaw Lake, N. Wabiskaw Lake, McMurray, Chipewyan, Fort Vermillion, Fitzgerald, Province of Alberta; Fort Smith, Resolution, Hay River, Providence, Simpson, Liard, Wrigley, Norman, Good Hope, Arctic Red River, McPherson, Aklavik, in the Northwest Territories.

On June 6th, 1944, the Board of Transport Commissioners issued a new licence CTC(AT)34 in lieu of the original licence dated July 12th, 1939.

Since the inception of the Air Transport Board licence CTC(AT)34 has been renewed from time to time by Order of the Board pending the review of former licences pursuant to Part 11, Section 13, of the Aeronautics Act.





Licence No. CTC(AT)43

Pursuant to the provisions of the Air Transport Act 1938, MacKenzie Air Services Limited applied to the Board of Transport Commissioners on April 19th, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods between the terminal points Goldfields, Sask, and Yellowknife, N.W.T.

Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT)43 on August 24th, 1939, to the company which authorized a scheduled commercial air service between Goldfields, in the Province of Saskatchewan; and Yellowknife, in the Northwest Territories.

On July 19th, 1944, the Board of Transport Commissioners issued a new licence CTC(AT)43 in lieu of the original licence dated August 24th, 1939.

Since the inception of the Air Transport Board licence CTC(AT)43 has been renewed from time to time by Order of the Board pending the review of former licences pursuant to Part 11, Section 13, of the Aeronautics Act.

Licence No. CTC(AT)44

Pursuant to the provisions of the Air Transport Act 1938, MacKenzie Air Services Limited applied to the Board of Transport Commissioners on January 28th, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods between the terminal points Edmonton, Alberta and serving the intermediate points of Fort McMurray, Fort Chipewyan, Fort Fitzgerald, Fort Smith, Fort Resolution, Taltson River, Yellowknife, Gordon Lake, Yellowknife area, Fort Rae, Port Radium and Coppermine, and a non-scheduled commercial air service between Lac la Biche, Fort Mackay, Bitumont, Poplar Point, Embarras, Thekulthill Lake, Labyrinth Lake, Taltson River Lake, Whitefish Lake, Kamilukuak Lake, Snowdrift, Fort Reliance, Ptarmigan Lake, Black Lake, Mackay Lake, Outram Lake, Hottah Lake, Hottah Lake, White Eagle, Fort Franklin, Fort Norman, Mackintosh Bay, Douglas Bay, Letty Harbour, Baillie Island, Bernard Harbour, Reid Island, Richardson Island, Kugaryuak River, Tree River, Wilmot Island, Burnside Harbour, Cambridge Bay, Peterson Bay.

The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present. The author then goes on to discuss the various factors which have shaped the development of the United States, including the influence of the British, the Spanish, and the French. The paper concludes by stating that the study of the history of the United States is a task of great importance and one which should be undertaken by all who are interested in the country.

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Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT)44 August 31st, 1939, to the company which authorized a scheduled commercial air service between Edmonton, Lac la Biche, McMurray, Embarras, Chipewyan, Fitzgerald, in the Province of Alberta; Fort Smith, Resolution, Taltson River, Yellowknife, Gordon Lake, Rae, Port Radium, Coppermine, in the Northwest Territories; after supplementary application by the company the Board of Transport Commissioners amended licence CTC(AT)44 on June 5th, 1940, to read Edmonton, Lac la Biche, McMurray, Embarras, Chipewyan, Fitzgerald, in the Province of Alberta; Fort Smith, Resolution, Taltson River, Yellowknife, Gordon Lake, Rae, Cameron Bay (Port Radium), and/or Labine Point, Coppermine, in the Northwest Territories; and on November 18th, 1940, to read Edmonton, Lac la Biche, McMurray, Embarras, Chipewyan, Fitzgerald, in the Province of Alberta; Fort Smith, Resolution, Taltson River, Outpost Island, Yellowknife, Gordon Lake, Rae, Cameron Bay (Port Radium) and/or Labine Point, Coppermine, in the Northwest Territories.

On August 4th, 1944, the Board of Transport Commissioners issued a new licence CTC(AT)44 in lieu of the original licence dated August 31st, 1939.

Since the inception of the Air Transport Board licence CTC(AT)44 has been renewed from time to time by Order of the Board pending the review of former licences pursuant to Part 11, Section 13, of the Aeronautics Act.

Licence No. CTC(AT)63

Pursuant to the provisions of the Air Transport Act 1938, MacKenzie Air Service Limited applied to the Board of Transport Commissioners on April 19th, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods between the terminal points Peace River, Keg River, Carcajou, Fort Vermilion, Red River, Fort Smith and Yellowknife.

Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT) 63 on December 21st, 1939, to the company which authorized a scheduled commercial air service between Peace River, Keg River,





Carcajou, Fort Vermilion, Red River, in the Province of Alberta; Fort Smith, Yellowknife, Northwest Territories.

Since the inception of the Air Transport Board licence CTC(AT)63 has been renewed from time to time by Order of the Board pending the review of former licences pursuant to Part 11, Section 13, of the Aeronautics Act.

Licence No. CTC(AT)68

Pursuant to the provisions of the Air Transport Act 1938, Yukon Southern Air Transport applied to the Board of Transport Commissioners on April 4th, 1939, for a licence to operate a scheduled commercial air service to transport passengers and goods between the terminal points Edmonton, Alberta and Whitehorse, Yukon Territory and serving the intermediate points of Grand Prairie, Fort St. John.

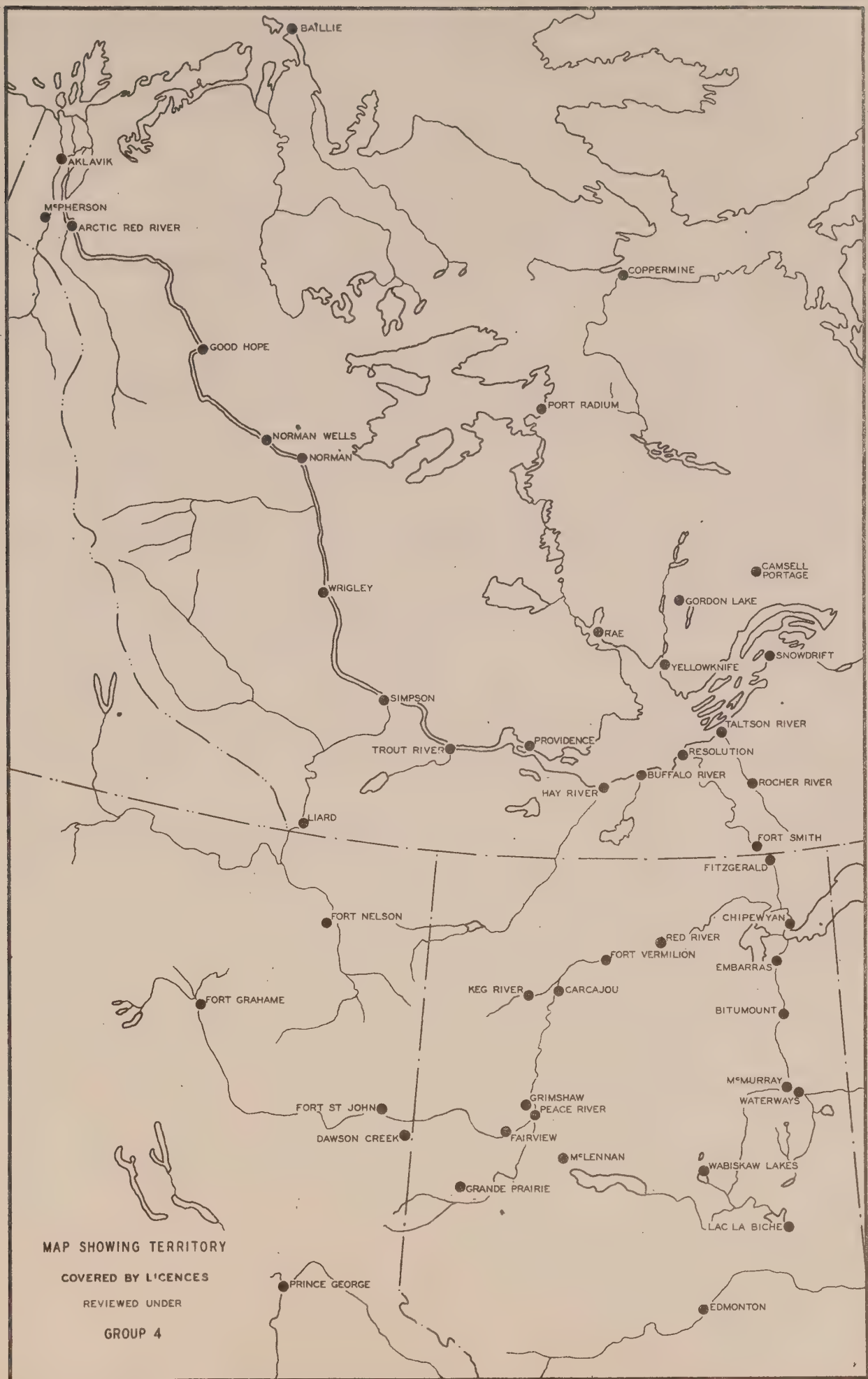
Subsequently the Board of Transport Commissioners issued Licence No. CTC(AT)68 on October 15th, 1940, to the company which authorized a scheduled commercial air service between Edmonton, Grande Prairie, Peace River, in the Province of Alberta; Dawson Creek, Fort St. John, Fort Nelson, Lower Post, in the Province of British Columbia; Watson Lake, Teslin, Whitehorse, in Yukon Territory.

On September 5th, 1944, the Board of Transport Commissioners issued a new licence CTC(AT)68 in lieu of the original licence dated October 15th, 1940.

Since the inception of the Air Transport Board licence CTC(AT)68 has been renewed from time to time by Order of the Board pending the review of former licences pursuant to Part 11, Section 13, of the Aeronautics Act.







MAP SHOWING TERRITORY

COVERED BY LICENCES

REVIEWED UNDER

GROUP 4





S E C T I O N    2

Airports and Air Navigation Aids Available

Summary

- (a) Airports having all facilities for twenty-four hour operation of  
airline medium type aircraft.

Edmonton, Alta.        Licence C.T.C. (AT) 27, 28, 33, 34, 44, 68  
Grande Prairie, Alta.   C.T.C. (AT) 68  
Lethbridge, Alta.

- (b) Airports having adequate dimensions for airline medium type aircraft  
but lacking full air navigation facilities.

Calgary, Alta.  
Dawson Creek, B.C.    C.T.C. (AT) 68  
Fort Nelson, B.C.    C.T.C. (AT) 27, 68  
Fort St. John, B.C.   C.T.C. (AT) 68  
Medicine Hat, Alta.

- (c) Airports with inadequate dimensions, or with few or no facilities  
or in disrepair.

Nil

- (d) Seaplane bases with full facilities.

Nil



(e) Seaplane bases with limited facilities and anchorage only

Chesterfield, N.W.T.	
Cold Lake, Alta.	
Cooking Lake, Alta.	
Edmonton, Alta.	C.T.C. (AT) 27, 28, 33, 34, 44, 68
Fitzgerald, Alta.	C.T.C. (AT) 27, 28, 34, 44
Fort Chipewyan, Alta.	C.T.C. (AT) 27, 28, 33, 34, 44
Fort McMurray, Alta.	C.T.C. (AT) 27, 28, 33, 44
Lac La Biche, Alta.	C.T.C. (AT) 27, 28, 33, 44
Lake Newell, Alta.	
Peace River, Alta.	C.T.C. (AT) 63, 68
Tavani, N.W.T.	
Wager, N.W.T.	
Waterton Lake, Alta.	

(f) Landing Fields and Seaplane Bases with little or no facilities or for emergency use only

Landing Fields

Airdrie, Alta.		Holsom, Alta.	
Banff, Alta.		Innisfail, Alta.	
Blackfalds, Alta.		Inverlake, Alta.	
Bowden, Alta.		Jasper, Alta.	
Calgary, Alta. (Currie Barracks)		MacLeod, Alta.	
Champion, Alta.		Namoo, Alta.	
Claresholm, Alta.		Netook, Alta.	
Coleman, Alta.		Peace River, Alta.	C.T.C. (AT) 63, 68
Cooking Lake, Alta.		Pearce, Alta.	
Cowley, Alta.		Penhold, Alta.	
De Winton, Alta.		Shepard, Alta.	
Embarras, Alta.	C.T.C. (AT) 28, 33, 44	Standoff, Alta.	
Ensign, Alta.		Suffield, Alta.	
Frank Lake, Alta.		Vermilion, Alta.	
Gladys, Alta.		Vulcan, Alta.	
Granum, Alta.		Waterways, Alta.	C.T.C. (AT) 28
High River, Alta.		Whitla, Alta.	
		Whitehorse, Yukon	C.T.C. (AT) 68





Seaplane Bases

Aklavik, N.W.T.	C.T.C. (AT)	27, 34
Arctic Red River, N.W.T.	C.T.C. (AT)	27, 34
Baker Lake, N.W.T.		
Bitumont, Alta.	C.T.C. (AT)	27, 33
Cameron Bay, N.W.T.		
(Port Radium)	C.T.C. (AT)	28, 44
Carcajou, Alta.	C.T.C. (AT)	63
Coppermine, N.W.T.	C.T.C. (AT)	28, 44
Eskimo Point, N.W.T.		
Fort Vermilion, Alta.	C.T.C. (AT)	34, 63
Fond Du Lac, Sask.	C.T.C. (AT)	33
Fort Smith, N.W.T.	C.T.C. (AT)	27, 28, 33, 34, 44, 63
Goldfields, Sask.	C.T.C. (AT)	28, 33, 43
Good Hope, Alta.	C.T.C. (AT)	27, 34
Gordon Lake, N.W.T.	C.T.C. (AT)	28, 44
Hay River, N.W.T.	C.T.C. (AT)	27, 34
Keg River, Alta.	C.T.C. (AT)	63
Labine Point, N.W.T.	C.T.C. (AT)	28, 44
Liard, N.W.T.	C.T.C. (AT)	27, 34
Lower Post, B.C.	C.T.C. (AT)	68
McPherson, N.W.T.	C.T.C. (AT)	27, 34
Nelson Forks, B.C.	C.T.C. (AT)	27
Norman, N.W.T.	C.T.C. (AT)	27, 34
Outpost Island, N.W.T.	C.T.C. (AT)	28, 44
Providence, N.W.T.	C.T.C. (AT)	27, 34
Rae, N.W.T.	C.T.C. (AT)	28, 44
Red River, Alta.	C.T.C. (AT)	63
Repulse, N.W.T.		
Resolution, N.W.T.	C.T.C. (AT)	27, 28, 34, 44
Rocher, N.W.T.	C.T.C. (AT)	27
Simpson, N.W.T.	C.T.C. (AT)	27, 34
Stony Rapids, Sask.	C.T.C. (AT)	33
Taltson River, N.W.T.	C.T.C. (AT)	27, 44
Teslin, Yukon	C.T.C. (AT)	68
Wabiskaw Lake (N.) Alta.	C.T.C. (AT)	28, 33, 34
Wabiskaw Lake (S.) Alta.	C.T.C. (AT)	28, 33, 34
Watson Lake, Yukon	C.T.C. (AT)	68
Wrigley, N.W.T.	C.T.C. (AT)	27, 34
Yellowknife, N.W.T.	C.T.C. (AT)	28, 43, 44, 63





CALGARY, ALTA.  
(Municipal)

Altitude 3450'

Landing Field

Position

Air Nav. Chart Banff - Bassano

51° 06' N. 114° 01' W.

4 miles N.E. centre of City

Runways

Nature	Asphalt	Dimensions	4635' x 150'	3207' x 100'
			3400' x 150'	3425' x 75'
			4460' x 150'	4020' x 100'
			4125' x 150'	3600' x 100'

Classification Good

Ownership Calgary & Dominion Government

Operated by Dept. of Transport

Facilities

Repairs Nil Fuel 87, 90, 100 Oil 80, 100

Communication W/T, Telephone, radio, teletype

Telegraph in City

Transportation Bus, railway

Passenger Limited at field

Facilities

Hotels in City

Lighting

Rotating beacon, code beacon, approach lights, boundary lights, range lights, contact lights, obstruction lights, lighted wind tee

Radio Range Call Sign VFA W/T

Frequencies Recs. 3105, 3117.5, 4495, 6210  
Trans. 344

Meteorological  
Facilities

Teletype reporting station

1. *Phragmites australis* (Cav.) Trin. ex Steud.

Days of Rain (X)	Days of Sunshine (Y)
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

CHESTERFIELD, N.W.T.      Altitude    S.L.      Seaplane Base

Position  $63^{\circ} 20' \text{ N.}$   $90^{\circ} 41' \text{ W.}$

Alighting Area Hudson Bay (S. of Post) NW/SE 2 miles

NE/SW 0.7 miles

Lake N. of Post      N/S 0.8 miles

Classification      Poor

Break-up 1 July

Freeze-up 20 Oct.

R.C.M.P. 4 buoys H.B. Co. 4 buoys beach a/c

Lake is sheltered in storms 14' tide

Facilities	Repairs	Fuel Yes
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Communication      Radio, telephone

Passenger Facilities	Accommodation
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1. The first part of the report is devoted to a general survey of the situation in the country.

2. The second part of the report is devoted to a detailed analysis of the economic situation.

3. The third part of the report is devoted to a detailed analysis of the social situation.

4. The fourth part of the report is devoted to a detailed analysis of the cultural situation.

5. The fifth part of the report is devoted to a detailed analysis of the political situation.

6. The sixth part of the report is devoted to a detailed analysis of the international situation.

7. The seventh part of the report is devoted to a detailed analysis of the military situation.

8. The eighth part of the report is devoted to a detailed analysis of the diplomatic situation.

9. The ninth part of the report is devoted to a detailed analysis of the foreign trade situation.

10. The tenth part of the report is devoted to a detailed analysis of the financial situation.

11. The eleventh part of the report is devoted to a detailed analysis of the budget situation.

12. The twelfth part of the report is devoted to a detailed analysis of the tax situation.

13. The thirteenth part of the report is devoted to a detailed analysis of the monetary situation.

COLD LAKE, ALTA.                      Altitude 1756'                      Seaplane Base

Position                      54° 28' N.                      110° 10' W.

Alighting Area                      Cold Lake (N. of Town) NS 11.5 miles E/W 2 miles  
NE/SW 2.5 miles                      NW/SE 2 miles  
Cove (2½ miles E. of Town) E/W 1.3 miles N/S  
3.5 miles

Classification                      Good

Break-up                      25 May

Freeze-up                      10 Oct.

No buoys                      Tie up to docks or beach a/c

Good beach E. of Town

Facilities                      Repairs                      Fuel Yes

Docks

Communication Telephone Telegraph (Beaver River)

Transportation Road

Passenger                      Hotels  
Facilities

1. The first part of the paper is devoted to the study of the

properties of the function  $f(x)$  defined by the equation

2. It is shown that the function  $f(x)$  is continuous and

differentiable at the point  $x = 0$ .

3. The next part of the paper is devoted to the study of the

properties of the function  $f(x)$  defined by the equation

4. It is shown that the function  $f(x)$  is continuous and

differentiable at the point  $x = 0$ .

5. The next part of the paper is devoted to the study of the

properties of the function  $f(x)$  defined by the equation

6. It is shown that the function  $f(x)$  is continuous and

differentiable at the point  $x = 0$ .

7. The next part of the paper is devoted to the study of the

properties of the function  $f(x)$  defined by the equation

8. It is shown that the function  $f(x)$  is continuous and

differentiable at the point  $x = 0$ .



COOKING LAKE, ALTA.      Altitude      2419'      Seaplane Base

Position      53° 26' N.      113° 08' W.

20 miles S.E. of Edmonton

Alighting Area      NW/SE & NE/SW      3 miles

E/W 2 miles

Classification      Good      shallow shoreline

Break-up      30 April

Freeze-up      25 October

R.C.A.F. No buoys      Beach or tie up to dock

Silt and clay bottom

Facilities      Repairs Limited      Fuel 87, 100      Oil All grades

Communication      Telephone, Radio

Transportation      Highway to Railway ( 8 miles)

Passenger      Very limited at base

Facilities

Hotels in Town

Meteorological

Facilities

By phone from Edmonton



DAWSON CREEK, B.C.      Altitude    2196'      Landing Field

Position 55° 45' N. 120° 15' W.

1 mile S. of Dawson Creek

Runways	Nature of gravel	Asphalt penetration	Dimensions	6200' x 150'
				(06-24)

(snow compaction in winter)

Ownership      Leased      Operated by R.C.A.F.

Facilities	Repairs	Servicing	Fuel 90, 100 emergency	Oil ?
------------	---------	-----------	---------------------------	-------

No hangars

Communication Telephone, teletype

## Telegraph in town

Passenger	Hotels in town
Facilities	

Lighting	Contact lights, range lights, flood lights, obstruction lights, flare path on request
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EDMONTON, ALTA.          Altitude 2185'          Landing Field

Position                  Air Nav. Chart          Red Deer - Edmonton  
53° 34' N.                  113° 31' W.  
(N.W. suburbs of City)

Runways                  Nature Concrete          Dimensions 4451' x 200'  
5868' x 200'  
5700' x 200'

Classification Good

Ownership                  City & Dominion Government

Operated by Dept. of Transport

Facilities                  Repairs Major          Fuel 87, 90, 91, Oil all grades  
100  
Hangars available

Communication Telephone, teletype, radio, telegraph

Transportation                  Bus, railway, taxi, highway

Passenger                  Limited at field  
Facilities

Hotels in Edmonton

Lighting                  Rotating beacon, code beacon,  
approach lights, (Bartow approach &  
contact on one runway), contact  
lights, range lights, obstruction  
lights emergency flare path, lighted  
wind tee

Radio Range Call Sign          VFE W/T

Frequencies Recs. 3105, 3117.5, 4495, 6210, 5390  
Trans. 266                  5390

Meteorological  
Facilities                  Central independent forecast station

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EDMONTON, ALTA.

Altitude 1993'

Seaplane Base

Position

53° 36' N.      113° 22' W.

7½ miles N.E. Edmonton

Alighting Area

N. Sask. River

N/S & E/W 2 miles

Classification

Private Port

Break-up

25 May

Freeze-up

10 Oct.

Docks

No Buoys

Used by C.P.A.L.

Facilities

Repairs

Repair Shop

Fuel Available

Communication )

Passenger )

Facilities )

At Edmonton





FITZGERALD, ALTA.                      Altitude                      682'                      Seaplane Base

Position                      59° 52' N.                      111° 35' W.

Alighting Area                      Slave River (E. of Town)

NE/SW                      1.7 miles

NW/SE                      2 miles

Classification                      Fair

Break-up                      25 May

Freeze-up                      10 Oct.

No buoys                      Anchor or beach a/c

Rapids  $1\frac{1}{2}$  miles N. of settlement

Rippling due to 6 kts. current.                      Flows N.W.

Rocks on both sides NW/SE river

Driftwood at high water

Facilities                      Repairs                      Fuel Yes

Garage (8 miles)

Communication                      Telephone

Passenger                      Hotel & Restaurant in settlement  
Facilities



FORT CHIPEWYAN, ALTA.      Altitude 699'      Seaplane Base

Position                      58° 43' N.                      111° 09' W.

Alighting Area      Lake Athabaska (S. of settlement)

E/W and NE/SW 2.7 miles

NW/SE 2 miles

Classification      Fair

Break-up                      1 June

Freeze-up                      15 Oct.

No buoys                      Anchor or tie-up to dock

Do not beach a/c

Usually rough

Facilities      Repairs                      Fuel 90 from  
   C.P.A.L.

Communication      Radio  
   Post Office

Passenger                      Physician and small hotel  
Facilities





FORT McMURRAY, ALTA.      Altitude    795'      Seaplane Base

Position 56° 44' N. 111° 21' W.

Alighting Area      Clear water river NW/SE 2 miles n.g. at low water  
Athabaska River (E. shore)      N/S 1.5 miles  
Snye River N. of settlement along N. shore  
WNW/ESE 1.3 miles

Classification Poor - muddy water usually glassy

Break-up 15 May

Freeze-up 15 Oct.

No buoys - tie-up to C.P.A.L. docks

Facilities	Repairs	Minor	Fuel	Yes
------------	---------	-------	------	-----

Ramp

Communication Telegraph R/T

Post Office

Transportation      Railway

Passenger	Hotel
Facilities	



FORT NELSON, B.C.      Altitude 1247'      Landing Field

Position      58° 50' N.      122° 35' W.  
15 miles N.W. of Clarke Lake

Runways      Nature Asphalt      Dimensions 6450' x 200'  
4650' x 150'

Ownership B.C. Gov't.      Operated by R.C.A.F.  
Used by C.P.A.L.

Facilities      Repairs Minor      Fuel 90, 100 Oil Not known  
Hangars

Communication Radio, telephone, teletype, telegraph

Transportation All-year road to Dawson Creek

Passenger Limited accommodation  
Facilities

Lighting Rotating beacon, boundary lights, contact  
lights, threshold lights, obstruction  
lights, portable electric flare path,  
lighted wind tee, Bartow approach lights  
on one runway

Radio Range Call Sign      VFCM      W/T

Frequencies Recs. 3105, 4495, 5390, 6210  
Trans. 382 5390

Meteorological Teletype reporting station  
Facilities





FORT ST. JOHN, B.C.      Altitude 2276'      Landing Field

Position                      56° 14' N.                      120° 44' W.

4½ miles E. of Fort St. John

Runways                      Nature Asphalt      Dimensions 6700' x 200'  
6700' x 200'  
3500' x 75' (dirt)

Ownership Dominion & B.C. Gov't Operated by R.C.A.F.

Used by C.P.A.L. & U.S.A.A.F.

Facilities      Repairs Maintenance & minor Fuel 73, 91, 100  
130  
Hangars                      Oil 100 & 120

Communication Radio, telephone, teletype

Transportation Highway

Passenger                      Limited at field  
Facilities

Lighting                      Rotating beacon, Bartow approach lights,  
(one runway), contact lights, range  
lights, obstruction lights, portable  
electric flare path, lighted wind tee

Radio Range Call Sign VFBJ      W/T

Frequencies Recs. 3105, 4495, 5390, 6210  
Trans. 320, 5390

Meteorological                      Teletype reporting station  
Facilities

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Meteorological      Teletype reporting station  
Facilities



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LAC LA BICHE, ALTA.      Altitude 1784'      Seaplane Base

Position      54° 46' N.      111° 58' W.

Alighting Area      N. & W. of Town      E/W 2 miles  
                         N/S. 4.7 miles      NW/SE 7 miles  
                         NE/SW 4 miles      E. of Town N/S 2.3 miles

Classification      Good

Break-up      15 May

Freeze-up      15 Oct.

No buoys      Beach or tie to docks

Very rough in strong N. & N.W. winds

Sand beach

Facilities      Repairs      Fuel Yes

Docks, garages

Communication      R/T

Telegraph, Telephone

Transportation      Railway, road

Passenger      Hotel  
Facilities

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LAKE NEWELL, ALTA.      Altitude 2494'      Seaplane Base

Position                      50° 29' N.                      111° 56' W.

Alighting Area      N/S 8 miles                      E/W 3.2 miles  
                            NW/SE 3.5 miles                      NE/SW 3.7 miles

Classification      Good

Break-up                      15 May

Freeze-up                      15 Oct.

                            No buoys      Anchor or beach a/c

Facilities      Repairs                      Fuel Yes, at  
   Brooks

Communication                      Telephone, Telegraph

Transportation                      Railway at Brooks (6 miles)

1. The first part of the report is a general introduction to the subject.

2. The second part is a detailed description of the methods used.

3. The third part is a discussion of the results obtained.

4. The fourth part is a conclusion.

5. The fifth part is a list of references.

6. The sixth part is a list of symbols.

7. The seventh part is a list of abbreviations.

8. The eighth part is a list of figures.

9. The ninth part is a list of tables.

10. The tenth part is a list of appendices.



LETHBRIDGE, ALTA.      Altitude 3020'      Landing Field

Position      Air Nav. Chart      Cranbrook - Lethbridge

49° 38' N.      112° 48' W.

Runways	Nature	Asphalt	Dimensions	3508' x 150'
				3660' x 150'
				3500' x 150'
	Grass			4700' x 150'

Classification    Good

Ownership      Lethbridge & Dominion Government  
                  (Customs port of entry)

Operated by Dept. of Transport

Facilities    Repairs    Major      Fuel 87, 100    Oil 80, 100

Hangars available

Communication    Telephone, teletype, radio

Transportation    Bus, railway, taxi

Passenger      Limited at field  
Facilities

Hotels in City

Lighting      Rotating beacon, approach lights,  
                  contact lights, range lights, taxi  
                  lights, obstruction lights

Radio Range Call Sign    VFS

Frequencies    Recs. 3105, 3117.5, 4495, 6210  
                  Trans. 248

1. The first part of the paper is devoted to a general discussion of the problem.

2. The second part is devoted to a detailed study of the case of a single particle.

3. The third part is devoted to a study of the case of a system of particles.

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26. The twenty-sixth part is devoted to a study of the case of a system of particles.

MEDICINE HAT, ALTA.      Altitude 2351'      Landing Field

Position                      50° 02' N.                      110° 43' W.

2½ miles S.W. of centre of Medicine Hat

Runways	Nature	Asphalt	Dimensions	3025' x 100'	3010' x 100'
				2885' x 100'	2760' x 100'
				2760' x 100'	2765' x 100'

Classification    Good

Ownership                      Dominion Government & Medicine Hat

Operated by Dept. of Transport

Facilities	Repairs	Fuel 87	Oil 100
------------	---------	---------	---------

Hangars

Communication    Telephone, telegraph, teletype, radio

Transportation    Bus, railway

Passenger	Hotels in Medicine Hat
Facilities	

Lighting	Rotating beacon, code beacon, boundary lights, range lights, contact lights, obstruction lights, lighted wind tee
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Radio Range Call Sign    VFM      W/T

Frequencies	Recs. 3105, 3117.5, 6210
	Trans. 332

Meteorological	Teletype reporting station
Facilities	

1900

1901

1902

1903

1904

1905

1906

1907

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1909

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1911

1912

1913

1914

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1916

1917

1918

1919

1920

PEACE RIVER, ALTA.      Altitude      1470' (approx.)      Seaplane Base

Position      56° 14' N.      117° 19' W.

Alighting Area      S. of R.R. bridge      NNV/SSE 2 miles  
N. " " "      N/S 1.7 miles

Classification      Good

Break-up      1 May

Freeze-up      1 Nov.

No buoys - tie to C.P.A.L. docks

Facilities      Repairs      Fuel 87      Oil 100,120  
                 Dock

Communication Telephone, Telegraph

Transportation Road, railway

Passenger      Hotel  
Facilities

1. The first part of the paper is devoted to a general discussion of the problem.

2. The second part is devoted to a detailed analysis of the case.

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13. The thirteenth part is devoted to a detailed analysis of the case.



TAVANI, N.W.T.                      Altitude   S.L.                      Seaplane Base

Position                              62° 04' N.                      93° 07' W.

Alighting Area                      Hudson Bay (Cove in front of Post)

E/W   2 miles

Classification   Good

Break-up                              July 1

Freeze-up                              Nov. 1

No Buoys                      Anchor a/c                      H.B. Co.

14' tide                      Reefs at low tide

Facilities                      Repairs   Nil                      Fuel Available

Communication                      Radio

Passenger  
Facilities                      At H.B. Co. Post

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WAGER, N.W.T.      Altitude      S.L.      Seaplane Base

Position              65° 55' N.              91° 15' W.

Alighting Area      Ford Lake      Cove E. of Post      N/S 2.4 miles  
Outer lake - any direction unlimited

Classification      Very good

Break-up              10 July

Freeze-up              20 Sept.

No buoys              H.B. Co.

Facilities      Repairs              Fuel      Yes

Communication      At H.B. Co. Post



WATERTON LAKE, ALTA.      Altitude 4193'      Seaplane Base

Position      49° 03' N.      113° 54' W.

Alighting Area      NNW/SSE 5.5 miles  
                         E/W 2.2 miles

Classification      Good  
Break-up      25 May  
Freeze-up      10 Oct.  
No buoys

Communication      Telephone, Post Office

Transportation      Road

Passenger      Accommodation  
Facilities





SECTION 3

SERVICES RENDERED

The services rendered under the existing licences as at October 8th, 1946 was as follows:

LICENCES NOS. CTC (AT) 27, 28, 33, 34, 43 AND 44

In these licences 37 different points are named. Of these, 24 receive regular scheduled service; one is served as a flag stop; one is served as an off-line point; one is served by motor vehicle service; four are served under other licences; and six do not receive service at all.

Schedules

McMurray, Fort Smith, Norman Wells

<u>Read down</u>			<u>Read up</u>		
41			42		
First & Third			Friday following		
Thursday month-			First and Third		
ly			Thursday		
AM			PM		
MT	8:30	Lv. McMurray/Waterways	Ar.	6:00	MT
	9:45	Ar. Fort Smith	Lv.	4:45	
	10:00	Lv. Fort Smith	Ar.	4:30	
	11:30	Ar. Hay River	Lv.	3:00	
	11:45	Lv. Hay River	Ar.	2:45	
	12:30	Ar. Providence	Lv.	2:00	
	12:45	Lv. Providence	Ar.	1:45	MT
PT	1:15	Ar. Fort Simpson	Lv.	11:15	
	1:30	Lv. Fort Simpson	Ar.	11:00	
	4:30	Ar. Norman Wells	Lv.	8:00	PT
PM			AM		

Equipment: Twin Engine Landplane or Single  
Engine Seaplane or Skiplane.

MT - Mountain Time

PT - Pacific Time



Edmonton, Alta. - Fort Smith -  
Yellowknife - Port Radium - Coppermine, N.W.T.

<u>Read Down</u>				<u>Read Up</u>	
51	47			48	52
Friday	Daily Except Sunday			Daily Except Sunday	Friday
AM	AM			PM	PM
	7:00	Lv.	Edmonton	Ar.	5:40
	8:40	Ar.	McMurray/Waterways	Lv.	4:00
	8:55	Lv.	McMurray	Ar.	3:45
	10:35	Ar.	Fort Smith	Lv.	2:05
	10:50	Lv.	Fort Smith	Ar.	1:50
	T	Ar.	Resolution	Ar.	S
	f	Lv.	Rocher River (Talston River)	Ar.	f
	f	Ar.	Outpost Island	Ar.	f
	<u>12:10</u>	Ar.	Yellowknife	Lv.	<u>12:30</u>
9:00		Lv.	Yellowknife	Ar.	6:00
@		Ar.	Gordon Lake	Ar.	@
c10:00		Ar.	Fort Rae	Ar.	5:00c
1:00		Ar.	Port Radium (Cameron Bay)	Lv.	2:00
X		Ar.	Coppermine	Lv.	X
	MVS		Fitzgerald	MVS	
	MVS		Fort Smith	MVS	
PM	PM			PM	PM

Equipment: Trips 47 - 48 - Twin Engine Landplane  
Trips 51 - 52 - Single Engine Seaplane or  
Skiplane

f - Flag Stop

@ - Licensed Off Line Points

c - 1st and 3rd Friday each month

X - Next trip Yellowknife - Coppermine

Saturday, December 14, 1946.

MVS - Via Motor Vehicle Service

T - Thursday only

S - Saturday only

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McMurray - Chipewyan, Alta. - Stony Rapids, Sask.

<u>Read down</u>				<u>Read up</u>	
53	49			50	54
Monthly	Thursday			Friday	Monthly Fri.
1st					following
Thurs.					1st Thurs.
PM	AM			PM	PM
	@		S. Wabiskaw Lake	@	
	@		N. Wabiskaw Lake	@	
	@		Lac la Biche	@	
	11:00	Lv.	McMurray (Waterways)	Ar. 4:00	
	f	Ar.	Bitumont	Ar. f	
	12:15	Ar.	Embarras	Ar. 2:30	
	12:45	Ar.	Chipewyan	Lv. 2:00	
1:00		Lv.	Chipewyan	Ar.	1:30
@			Fort Vermilion		-
2:00		Ar.	Goldfields	Ar.	12:30
			(Camsell Portage)		
2:30		Ar.	Fond du Lac	Ar.	11:45
3:30		Ar.	Stony Rapids	Lv.	11:00
PM	PM			PM	AM

Equipment: Single Engine Seaplane or Skiplane  
 @ - Licensed Off Line Point  
 f - Flag Stop

Fort McMurray - Fort Smith - Norman Wells - Aklavik,  
N.W.T.

<u>Read down</u>					<u>Read up</u>				
39					40				
Dec.	Dec.	Jan.	Feb.	Mar.		Mar.	Feb.	Jan.	Dec.
5	19	16	20	20	Lv. Fort McMurray	Ar. 24	24	20	23 9
5	19	16	20	20	Lv. Fort Smith	Ar. 24	24	20	23 9
5	19	16	20	20	Ar. Fort Simpson	Lv. 24	24	20	23 9
5	19	16	20	20	Lv. Fort Simpson	Ar. 24	24	20	23 9
5	19	16	20	20	Ar. Wrigley	Ar. 24	24	20	23 9
5	19	16	20	20	Ar. Fort Norman	Ar. 24	24	20	23 9
5	19	16	20	20	Ar. Norman Wells	Lv. 24	24	20	23 9
6	20	17	21	21	Lv. Norman Wells	Ar. 23	23	19	22 8
6	20	17	21	21	Ar. Good Hope	Ar. 23	23	19	22 8
6	20	17	21	21	Ar. Arctic Red River	Ar. 23	23	19	22 8
6	20	17	21	21	Ar. Fort McPherson	Ar. 23	23	19	22 8
6	20	17	21	21	Ar. Aklavik	Lv. 23	23	19	22 8

Equipment: Twin Engine Douglas and Single Engine  
 Norseman or Bellanca.





All of the points named in these licences Nos. 27, 28, 33, 34, 43 and 44 receive service as set out in the above schedules, with the exception of Fort Vermilion, Fort Nelson, Rocher River, Talston River, Outpost Island, N. Wabiskaw Lake, South Wabiskaw Lake, and Lac la Biche.

Fort Vermilion, Fort Nelson, Nelson Forks, and Fort Liard are served under other licences. Lack of traffic at N. Wabiskaw Lake, S. Wabiskaw Lake, and Lac la Biche would indicate that these points are not now, in fact, receiving any service. Lack of traffic and suitable landing facilities for wheel aircraft would indicate that Rocher River, Talston River, and Outpost Island do not now receive any service.

#### LICENCES NOS. 63 AND 68

In these licences, sixteen different points are named. Of these, ten receive regular scheduled service; one is as an off-line point; one is served through motor vehicle service; and four are not served at all.

#### Schedules

Edmonton, Alta. - Whitehorse, Y. T..



Edmonton, Alta. - Whitehorse, Y. T.

<u>Read down</u>				<u>Read up</u>			
23				24			
Daily				Daily			
Exc. Sun.				Exc. Sun.			
PM				AM			
11:55	MT	Lv. Edmonton	Ar.	MT	7:00		
1:40		Ar. Grande Prairie	Lv.		5:25		
1:50	MT	Lv. Grande Prairie	Ar.	MT	5:15		
@Ø		Ar. Peace River	Lv.		@Ø		
fØ		Ar. Dawson Creek	Ar.		fØ		
1:30	PT	Ar. Fort St. John	Lv.	PT	3:25		
2:00		Lv. Fort St. John	Ar.		3:00		
3:25		Ar. Fort Nelson	Lv.		f		
3:35	PT	Lv. Fort Nelson	Ar.	PT	f		
MVS		Lv. Lower Post	Ar.		MVS		
4:25	YT	Ar. Watson Lake	Lv.		f		
4:35		Lv. Watson Lake	Ar.		f		
fØ		Ar. Teslin	Ar.		fØ		
6:00	YT	Ar. Whitehorse	Lv.	YT	10:00		

Equipment: Twin Engine Lockheed Lodestar  
 f - Flag Stop PT - Pacific Time  
 Ø - Subject to landing conditions YT - Yukon Time  
 @ - Licensed Off-line Point FT - Fairbanks Time  
 MVS - Via Motor Vehicle Service  
 MT - Mountain Time

Edmonton - Peace River - Yellowknife

<u>Read down</u>				<u>Read up</u>			
29				30			
Mon. Wed.				Mon. Wed.			
Fri.				Fri.			
AM				PM			
6:00	Lv.	Edmonton	Ar.	6:25			
7:45	Ar.	Grande Prairie	Lv.	4:45			
8:00	Lv.	Grande Prairie	Ar.	4:30			
8:40	Ar.	Peace River	Lv.	3:50			
8:55	Lv.	Peace River	Ar.	3:35			
MVS	Ar.	Carcajou	Ar.	MVS			
W	Ar.	Keg River	Ar.	F			
W	Ar.	Fort Vermilion	Ar.	F			
@Ø	Ar.	Red River	Ar.	@Ø			
@	Ar.	Fort Smith	Ar.	@			
PM 12:00	Ar.	Yellowknife	Lv.	12:30 PM			



Equipment: Twin Engine Lockheed Lodestar or  
Douglass DC3

MVS - Via Motor Vehicle Service

F - Friday only

W - Wednesday only

@ - Licensed off-line point

Ø - Subject to landing conditions

All of the points named in these Licences Nos. 63 and 68 receive service as set out in the above schedules, with the exception of Dawson Creek, Lower Post, Teslin, and Red River.

Lack of proper landing facilities for the type of aircraft in use on these routes would indicate that Lower Post, Teslin and Red River are not now, in fact, receiving any service. Dawson Creek likewise lacks suitable landing facilities and is not now actually being served direct. Traffic to and from Dawson Creek is stated, however, to be moving through Fort St. John.





SECTION 4

AIR SERVICES IN AREA OTHER THAN THOSE UNDER REVIEW

The following air carriers have applied for and have been granted a licence or a favourable decision by the Air Transport Board as of the 31st December 1946 to operate -

(A) Scheduled Commercial Air Service:

NIL

(B) Non-scheduled between Specific Points:

<u>Name of Air Carrier</u>	<u>Points Served</u>	<u>Decision</u>	<u>Licence No.</u>
Foothills Aviation Ltd.	Calgary - Banff		49/46(NS)
Peace River Northern Airlines Limited	Yellowknife and Peace River	May 18/46	

(C) Non-scheduled Charter from Designated Base:

<u>Name of Air Carrier</u>	<u>Base</u>	<u>Decision</u>	<u>Licence No.</u>
Associated Airways Ltd.	Edmonton		13/46(C)
Kepler Aviation Limited	Calgary		27/45(C)
Kepler Aviation Limited	Lethbridge		31/46(C)
Foothills Aviation Limited	Calgary Municipal Airport		41/46(C)
Chinook Flying Service Ltd.	Calgary		48/46(C)
Canadian Airways Limited	Edmonton (Cooking Lake)		52/46(C)
Canadian Airways Limited	Fort McMurray		53/46(C)
Medicine Hat Air Service	Medicine Hat		74/46(C)
Peace River Northern Airlines Ltd.	Edmonton		101/46(C)



<u>Name of Air Carrier</u>	<u>Base</u>	<u>Decision</u>	<u>Licence No.</u>
Foothills Aviation Limited	Banff	Aug. 3/46	
Bullock Aviation Limited	Taber	Dec. 6/46	
Canadian Airways Limited	Norman Wells		50/46(C)
Canadian Airways Limited	Yellowknife		51/46(C)
Charter Airways Limited	Yellowknife		65/46(C)
Yellowknife Air Taxi	Yellowknife		82/46(C)
Peace River Northern Airlines Limited	Yellowknife		100/46(C)



## SECTION 5

### SURFACE TRANSPORTATION FACILITIES

The geographical area covered by the licenses in this Group extends from Edmonton on the south to the Arctic Ocean on the north. The district of important significance for purposes of this review is the section known as the "Mackenzie River Basin" centering on Great Slave Lake and radiating northwards to Akla-vik and Coppermine, and southwards to Edmonton. In reviewing the various surface transportation facilities within this area, the types of agencies are summarized as follows:

#### 1. Water

An efficient system of river transportation has evolved in the Mackenzie district adapted to the advantages and also limitations of the northward flowing rivers. From time to time traffic booms have occurred which found the transportation facilities inadequate and more equipment was constructed and improvements made. During 1942-44, the waterways passed through a period of unusual activity in which many changes took place and the present systems are adjusting themselves once more to peacetime conditions with the result that they are now better equipped to handle the normal traffic flow than at any previous time.

The Mackenzie, Athabaska and Slave Rivers provide an inland water transport system for a distance of about 1700 miles. This system is continuous except for one unnavigable stretch between Fort Fitzgerald and Fort Smith, a distance of about 16 miles. Supplies and passengers are transported around this portage by motorized equipment over well-constructed dirt roads. From Fort Smith there is uninterrupted navigation to the Arctic Ocean.

Four water transport companies operate freight boats and barges on the Mackenzie River system: The Mackenzie River transport (Hudson's Bay Co.), The Northern Transportation Co. Ltd., Yellowknife Transportation Co. Ltd. and McInnes Products Ltd. Only the first named company maintains a passenger service. For the 1945 season, these four companies had a total of 4 steamers, 23 motor vessels (14 operating north of Fort Smith) and 58 barges, including 3 refrigerated.

Most of the freight moved along the waterway is handled by the two chief transportation companies, with the Hudson's Bay Co. carrying the largest share of northbound supplies,





chiefly trade goods and food stuffs, and the Northern Transportation Co. handling most of the southbound freight, chiefly ore and concentrates from the mines, and oil from Norman Wells to Mackenzie district settlements.

The basic importance of water transportation within the Mackenzie district is illustrated by the fact that the average annual tonnage for the years 1938 to 1944 shows 20,833 tons moving northward from Waterways, 12,092 tons moving northbound into the Northwest Territories, 7,534 tons moving from point to point within the Northwest Territories, and 3,874 tons moving southbound to Waterways.

Freight on the Mackenzie waterway is carried by large barges pushed either by oil-burning stern-wheel steamers or by small propeller-driven diesel engined motor vessels. Although a certain number of the steamers carry passengers, the motor vessels are primarily concerned with transporting freight. Barges are a distinctive feature of Mackenzie transportation. They were originally introduced to increase the capacity of each trip and as the North developed and traffic grew, the number of barges increased. Whereas steamers used to push one or two barges, now as many as five carrying as much as 1500 tons have been moved by one steamer.

One of the chief economic problems facing the Mackenzie district water carriers is the small volume of southbound freight compared with the large volume of northbound freight and supplies. The following table based on the amount of freight moved on the Mackenzie waterway in recent years illustrates this lack of balance:

Mackenzie Waterway Freight Traffic

Year	Northbound From Waterways (tons)	Northbound into N.W.T. (tons)	Point to Point in N.W.T.. (tons)	Southbound to Waterways (tons)
1938	19,003	13,474	3,000	4,766
1939	16,521	8,550	4,045	4,996
1940	15,108	9,030	4,698	2,273
1941	19,364	13,613	4,471	3,123
1942	31,500(1)	15,794	10,892	2,981
1943	21,817		18,097	1,297
1944	22,522(2)			8,377(3)

(1) Includes 19,543 tons for Canol project.

(2) Includes 7,639 tons for U.S. Government.

(3) Includes 7,295 tons for Joint Defense Project.



From the south shore of Great Slave Lake the water transport service is divided between service northward to Yellowknife and service westward to the Mackenzie River and thence to Aklavik. The Waterways - Yellowknife service approximates 30 round trips per season of which some 5 trips serve Fort Radium.

The service between Great Slave Lake and Aklavik averages about 40 round trips per season with 12 to 15 trips beyond Aklavik to points along the Arctic Coast as Tuk Tuk, Bathurst Inlet and Coppermine. Due to boat load consignments and diversion of trips, points south of Aklavik tend to have a somewhat higher frequency of service than does Aklavik itself. Freight destined for the western Arctic coast is distributed from Tuk Tuk at the mouth of the Mackenzie River.

Until recent years the western Arctic coast was served by ocean going vessels from Pacific coast seaports via Bering Strait but at the present time this service is discontinued. Vessels operated by the Hudson's Bay Co. which connect with Mackenzie River boats at Tuk Tuk provide freight and limited passenger service to points along the coast.

From a water transportation standpoint, it is essential to note that the season of navigation on Great Slave Lake is some 4 to 5 weeks shorter than the period of river navigation. This means that in the spring of the year the first northbound shipments may move from Waterways to Great Slave Lake, but must await break-up on the lake before proceeding either to Yellowknife or the Mackenzie River points. Similarly, late fall shipments may be transported northward or southward as far as Great Slave Lake while river navigation is still open, but cannot be moved across the lake by tractor until after freeze-up. This is significant because it means that shipments may be held at Hay River or Resolution awaiting the opening of lake navigation in the spring or the beginning of winter tractor train services in the fall. For rush shipments during this transitory period, the alternative is movement by air.

As an adjunct to the principal water routes outlined above, there are two subsidiary routes. One route branches eastward from the Waterways - Great Slave Lake route crossing Lake Athabaska from Chipewyan on the west to Goldfields, Fond du Lac and Stony Rapids on the east. This service has an average frequency of two sailings per season.



A second subsidiary route serves the Peace River - Fort Vermilion area but does not connect with the Waterways - Great Slave Lake route. This is a freight and passenger service having a frequency of one round trip per month, May to September inclusive.

With the construction of the Grimshaw - Hay River highway, later referred to under the section dealing with highway facilities, Hay River is likely to become an important distributing point for the Great Slave Lake area. This may necessitate a change in water transportation on Great Slave Lake itself, for the proposed highway, in conjunction with the size of the lake and difficulties of navigation, indicates that a shuttle service between Hay River and Yellowknife with shallow draught tugs and barges may eventually replace part of the present lake-river service.

At the present time, a new transportation service is being planned to serve communities along the Mackenzie River. The company which is undertaking this new venture proposes to ship from Edmonton to Dawson Creek by rail and thence by highway to Fort Nelson. It is anticipated that the difference in the Edmonton-Waterways rail rate as compared with the Edmonton-Dawson Creek rail rate will be such as to give reasonably competitive delivery costs at Fort Nelson as compared with Waterways and, at the same time, for shipments to be almost 500 miles closer to the Mackenzie River communities. The water service will operate via the Nelson and Liard Rivers joining the Mackenzie River at Simpson. This operation has an inherent advantage in that it by-passes Great Slave Lake during the period when Lake navigation is closed but river navigation remains open.

## 2. Rail

Edmonton is the terminal point for two railway routes penetrating the southernmost portion of the Mackenzie district. One route provides a freight and passenger service between Edmonton and Waterways. The other, a similar service between Edmonton and Fairview via McLennan and Peace River.

Between Edmonton and Waterways, a distance of 305 miles, there is a twice weekly return passenger service between Edmonton and Lac la Biche, and a weekly return service between Lac la Biche and Waterways. The average elapsed time, Edmonton





to Waterways, is 22 hours. Freight service over this route is extremely irregular depending upon the time of season, available storage facilities, water carrier connections and the quantity of traffic to be transported. Generally, the service reaches its maximum towards the end of the season of water navigation.

Between Edmonton and Fairview, 366 miles northwards, there is a daily, except Saturday, service northbound to McLennan and then a tri-weekly service via Peace River to Fairview. Southbound trains have a tri-weekly departure from Fairview arriving in Edmonton the following morning, an average elapsed time of  $17\frac{1}{2}$  hours.

### 3. Highway

At the present time the Mackenzie district with the exception of the most southern portion is without highway facilities. However, there is now in process of construction a highway between the rail point of Grimshaw, 18 miles west of Peace River, and Hay River on the southwest shore of Great Slave Lake, a distance of 387 miles. Due to difficulties of terrain this route will run somewhat west of Fort Vermilion but will be connected with Vermilion by a branch route. For the portion of the road within the Province of Alberta, the Provincial Government will contribute towards costs approximately \$2,100,000, and the Federal Government a maximum of \$1,375,000. For construction of that portion within the Northwest Territories, the Federal Government will bear the whole cost, estimated to be \$1,243,000.

The opening of this highway will make Grimshaw on the Edmonton - Fairview rail route competitive with Waterways on the Edmonton - Waterways rail route for freight and express traffic destined to the Yellowknife and Mackenzie River areas. While at the present time it is difficult to state the exact form this competition may take, yet it is possible to outline the major factors which will affect the situation. The Edmonton - Waterways - Great Slave Lake route with joint rail and water carriage is largely based upon the movement of bulk freight. To the extent that seasonal navigation permits, the service has been commensurate with the needs of people who order in large quantities once or twice a year. However, with the opening of the highway between Grimshaw and Hay River, motor carriers, able to operate over a longer period than the seasonal water carriers, can provide a more expeditious rail-highway-water service from Edmonton to points beyond Great





Slave Lake. Based upon a reduced in-transit time, a longer shipping season, and the fact that the average carload rate Edmonton to Grimshaw is less than the Edmonton - Waterways rate, there is reason to believe that the proposed highway route will compete very favourable with the present rail-water route. General indications are that this competition will be most noticeable in the field of express and package freight and have the least effect on bulk freight shipments such as fuel oil and lumber. Judging by the present rates along the Alaska highway, the estimated shipping cost along the new route will approximate \$55 per ton for the highway haul. To this must be added the cost of water transportation across the lake to Yellowknife, so on a dollar basis, there may be little or no saving over the former route.

Nevertheless, the completion of the Hay River road will mean that two of the main physical problems of the Mackenzie waterway--low water in the Athabaska delta and the rapids in Slave River--will be avoided and the ultimate extension of the road to the vicinity of Fort Providence will be--pass the third major difficulty--the ice of Great Slave Lake. Since most of the freight along the road will be desinted for Yellowknife and will still have to cross Great Slave Lake, it remains to be seen whether motor transport can be more economical than water transport even with the present disadvantages of the latter.

The history of the Mackenzie valley has always been closely connected with that of the waterway. If past historical events can indicate future trends, the Mackenzie is about to begin a new era. Routes into the valley have changed over the years--the LaLoche portage was replaced by the Athabaska River when a wagon road was constructed north from Edmon--the Athabaska route was replaced by the Peace River route when rail service was extended to Peace River--both routes were replaced by the present waterway route from McMurray when rail service was extended from Edmonton to McMurray. The present road development brings the balance back in the other direction--back to the Peace River rail route and northward by road.

#### 4. Tractor Services

Winter tractor services have, during recent years, become of less and less importance as a transportation factor in the Mackenzie district. Tractor roads exist between Fort Smith and Hay River and between Hay River, Fort Norman and Norman Wells. Complementing this main route are secondary routes to Fort Simpson and Trout Lake and from Upper Hay River to Hay Lake and to Fort Vermilion. Services performed are not of a scheduled nature and have in fact been generally supplanted by air transport.



At the present time the most significant winter tractor service has been operated between Yellowknife and the south shore of Great Slave Lake. This service is based on the movement of goods which have been stored at lake terminals at the close of navigation. As this service is directly dependent upon such diverse factors as early freeze-up, late ordering and the quantity and urgency of the traffic to be moved, it is of a very irregular and transitory nature. During the winter of 1945, the traffic over this route reached the highest peak yet attained, approximately 3,300 tons.



## SECTION 6

### ECONOMIC CHARACTERISTICS

For the purpose of evaluating the economic characteristics of the Alberta and Northwest Territories area, this section of the report is divided into two parts:-

- (1) that portion of Northern Alberta which includes Edmonton, Waterways, Grande Prairie and Peace River;
- (2) that area of Northern Alberta and the Northwest Territories lying north of Waterways and tributary to the Athabaska, Slave and Mackenzie Rivers--hereafter referred to as the Mackenzie area.

#### 1. GENERAL REVIEW OF THE AREA

##### (a) Northern Alberta Area

##### Edmonton

Edmonton, the capital of Alberta and the most northerly situated of Canadian cities, is the gateway to the Northern Alberta and the Mackenzie River areas. It is located on the east-west route of the Canadian National Railway and the north-south route of the Canadian Pacific Railway, and is the southern terminal of the Northern Alberta Railway. It is also served by Trans-Canada Air Lines connections to Calgary, and Canadian Pacific Air Lines connections to British Columbia and Alaska as well as services throughout the Mackenzie area.

In addition to the government and administrative offices of the province, educational and hospital facilities, financial concerns and business agencies exist. Many of the principal Canadian business concerns have established wholesaling and distributive facilities in Edmonton and others have built manufacturing plants to serve the area. These facilities, together with the large number of retail stores, serve to make Edmonton the second most important trade area in Alberta, being surpassed only by Calgary.

With an urban population of 93,817, the manufacturing, retailing, and wholesaling trade is substantial. On the basis of 1941 census statistics, Edmonton ranks 26th in value of retail sales, 13th in whole-sale sales, and 40th in value of manufactures. Postal receipts increased from \$589,000 in 1931 to \$846,000 in 1941 and \$1,245,000 in 1945. The value of the wholesale business valued at \$86,610,000 in 1941 indicates the importance that Edmonton bears as a distributing point for the north and northwestern districts of Canada.





### Waterways

Waterways is the northern terminal of the Northern Alberta Railway and the southern terminal of the water carriers operating northwards along the Athabaska, Slave and Mackenzie Rivers. It has a district population of 1,854 of which 395 people are local residents. On a district basis, retail sales amounted to \$175,000 in 1941; wholesale sales \$101,000; and gross value of manufacturing \$11,000. Postal revenues show an increase from \$2,000 in 1931 to \$3,000 in 1941 and \$3,650 in 1945.

Although the principal business of the town is transportation and activities related thereto, other sizeable businesses do exist. A subsidiary of the Dominion Tar and Chemical Company has operated a salt mine in the district for the past five years. In 1945, 67 employees were engaged in this business producing 30,000 tons of salt having a market value of \$430,000. Within a fifty-mile radius of Waterways, there are seven lumbering concerns. During the year 1944, production was valued at \$52,400, and 26 people were employed.

### Grande Prairie

Grande Prairie, situated 407 rail miles northwest of Edmonton on the western route of the Northern Alberta railway, has an urban population of 1,724 people. Municipal statistics indicate a retail sales volume of \$1,851,000, a wholesale sales volume of \$926,000, and manufacturing production valued at \$232,000 in 1941. There are 57 retail stores, 10 wholesaling establishments and 12 manufacturing concerns.

Although the volume of business is substantial for a locality of this size, the main economic activity of the district is farming. The farm population totals 6,610 people occupying 1,862 farms. Of the surrounding land area of 2,228,538 acres, 599,609 acres, or 27% are under cultivation. The total value of farms approximates \$9,500,000, with an average yearly product valued at \$2,500,000.

### Peace River

Peace River, 317 rail miles northwest of Edmonton, is a transfer point between rail service to Edmonton and water service by the Peace River northwards to Vermilion. It has an urban population of 873 people and a district population of 5,735 people. Farming is the principal activity of the district surrounding Peace River, with 4,360 people classed as farm population. Of a district land area of 3,417,910 acres, 360,244 acres are under cultivation. There are 1,215 farms in the immediate district having a total value approximating \$5,500,000, with an average yearly product value estimated at \$1,500,000.

For convenience, the principal economic characteristics of the above-mentioned points for the last census year (1941) are tabulated as follows, the data being on the basis of a 25-mile radius of each point:

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

Item	Edmonton	Waterways	Grande Prairie	Peace River
Population..... (No.)	120,286	1,854	9,280	5,735
Retail Sales..... (\$1000)	50,250	175	2,706	655
Retail Sales per Capita..... (\$)	418	94	292	114
Wholesale Sales..... (\$1000)	64,391	101	926	646
Manufacturing Gross Production... (\$1000)	52,751	11	232	120
Postal Revenues..... (\$1000)	846	3	32	18
Wage Earners..... (No.)	32,267	102	1,225	580
Earnings of Wage Earners..... (\$1000)	30,627	69	801	308
Average Earnings..... (\$)	949	676	654	531
Telephones..... (No.)	25,733	30	422	194
Telephones per 1000 population.... (No.)	214	16	45	34
Motor Vehicles..... (No.)	18,473	18	1,348	642
Motor Vehicles per 1000 population (No.)	154	10	145	112

(b) The Mackenzie Area

The total area of the Northwest Territories is 1,256,217 square miles, or more than one-third of the total area of the Dominion, and its population, according to the 1941 census, was 12,028, made up mostly of Indians and Eskimos. The Mackenzie district is approximately 527,470 square miles, with a population of 7,410, distributed as follows:-

Population Distribution

Mackenzie District 1941

Locality	Total	White	Indian	Eskimo	Other
Aklavik and district	757	167	213	377	-
Arctic Red River district	129	11	118	-	-
Baillie Island district	269	14	-	255	-
Thelow River district	38	-	-	38	-
Back River district	68	-	-	68	-
Coppermine and Coronation Gulf district	265	36	-	229	-
Fort Good Hope district	351	14	337	-	-
Fort Liard district	216	14	202	-	-
Fort McPherson district	325	17	308	-	-
Fort Norman district	264	63	200	1	-
Fort Providence district	415	39	376	-	-
Fort Rae district	767	81	686	-	-
Fort Reliance district	94	9	85	-	-
Fort Resolution district	655	136	499	-	-
Fort Simpson district	454	76	378	-	-
Fort Smith district	531	241	290	-	-
Fort Wrigley district	83	6	77	-	-
Great Bear Lake district	175	1	174	-	-
Hay River district	164	16	147	1	-
Yellowknife district	1,410	1,172	232	-	6
Grand Total	7,410	2,113	4,322	909	6

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Settlements in the Mackenzie area range in size and function from Wrigley, which has remained solely a trading post, to Yellowknife. Many of the settlements can be grouped together for review as they possess similar characteristics. For example, Hay River, Providence, Liard, Norman, Good Hope and McPherson are all riverside settlements of the linear type. They all contain police, signals, trading and missionary buildings, and a scattering of Indian cabins. There are from 10 to 30 white residents at each settlement and in the surrounding area from 200 to 300 Indians.

Fort Resolution, Rae, Fort Simpson and Aklavik are somewhat larger villages of the linear type, having some trading stores, a hotel, restaurant and several resident white trappers. In general, there are from 50 to 100 white residents in each place.

Fort Smith is still larger, containing Government administration offices and the warehouses and offices of the transportation companies. Owing to the barrier of the rapids in Slave River, Fort Smith became a transportation terminal and surpassed the settlements depending mainly on fur trade.

### Mining

Continuous mining operations commenced in the shield part of the Northwest Territories in 1933. Since that time minerals to the value of more than \$20,000,000 have been produced - of which considerably more than half has come from the gold mines around Yellowknife, which began production late in 1938, and the remainder largely from radium-silver mines at Great Bear Lake. Other products recovered in smaller quantity include copper, lead and tungsten.

Among the more important occurrences of minerals, mention should be made of gold which is widespread in the region extending northwestwards for 200 miles from the east arm of Great Slave Lake. Radium and silver minerals are found in a number of places around Great Bear Lake and to the south along Kamsi and Marion Rivers. Copper minerals are common around Coronation Gulf and south to Great Bear Lake. Cobalt and nickel are associated with the Great Bear Lake ores and are also found in the area adjacent to the east arm of Great Slave Lake. Lead minerals occur on the Arctic coast and in the Taltson River area. Lead, zinc, copper are found in the Yellowknife - Beaulieu region near Homer and Tumpline Lakes. Chromite has been reported in the copper mining river area and molybdenite is abundant in the Yellowknife district. Tungsten has occurred in the gold ores on Outpost Islands, Great Slave Lake, as well as in the scheelite deposits in the Yellowknife - Beaulieu regions. Tin is likewise found in both of these districts.

The settlement at Yellowknife is situated on Yellowknife Bay on the north shore of Great Slave Lake. It is the centre of activity in Yellowknife mining district where the principal industry is gold mining. The population, including that of the surrounding area, approximated 3,000 as of June, 1946.



In conjunction with Yellowknife mention should be made of the Snare River power project. This development was originally undertaken by Giant Yellowknife Gold Mines Ltd., for the production of electric power to assist in mining operations, and sites capable of developing 25,000 horsepower were located. After a detailed study of conditions the project was taken over by the Department of Mines and Resources of the Federal Government and an initial unit capable of producing 8,000 horsepower is under construction. A transmission line is being built to Yellowknife at an estimated cost of \$1,100,000.

The Yellowknife mining district comprises a large area and many localities have, as yet, received only casual examination. Although many thousands of claims have been staked, the seven principal mining areas under investigation and development to date are as follows:-

1. Yellowknife Bay and River
2. Gordon Lake
3. Beaulieu River
4. Indin Lake
5. McKay Courageous Lake
6. Russell-Slemon Lake
7. Hearne Channel (Great Slave Lake)

Gold was found in the Yellowknife River area on the north shore of the Great Slave Lake in 1934. Development on claims followed and in September, 1938, the Con Mine was in production. Other companies came into production later including the Rycon Mine and the Negus Mine in 1939; Slave Lake Gold Mines and Thompson - Lundmark Mines in 1941; and Ptarmigan Mines, near Prosperous Lake, early in 1942. Some high-grade ore was also established by Giant Yellowknife from property on the west shore of Yellowknife Bay but operations were suspended in 1940.

Mineral production in the Yellowknife district reached a peak in 1942 when gold to the value of \$3,826,000 was mined. Of this amount, approximately half came from the Con and Rycon Mines. Silver production in the Territory for the same year was \$9,500. Late in 1942, the war and labour shortages forced a recession of mining activity and mineral production and by the end of 1943, all mines with the exception of Negus had either closed down or ceased production. The Negus Mine was closed at the end of 1944. Although mineral production in the Yellowknife area ceased in 1944, maintenance and development work and diamond drilling was carried out over extensive zones. This resulted in the location and recording of more than 3,200 claims in 1944. By 1945 approximately 100 mine companies and syndicates were interested in mining claims and development. At the present time, the Negus Mine is in operation and milling is being resumed at the Con, Rycon and Thompson-Lundmark Mines.

In addition, development work is proceeding at other properties. Two shafts have been sunk at Giant Yellowknife Gold Mines, and it is expected that gold production will begin in 1948. Crestaurum Gold Mines are presently sinking a shaft and expect to commence milling in 1948. Preliminary reports indicate that milling on a small scale will be commenced by 1947 at properties of Peg Tantalum Mines near Ross Lake and De Staffany Tantalum Beryllium Mines in the Beaulieu River region.





It is important to note that as mining properties reach the production stage there is a shift from a stage of fluctuating employment to a condition of more stable and relatively larger employment. Basically this is due to the requirements of a given milling capacity for a related quantity of labour. On the basis of proposed milling capacity for proven properties in the Yellowknife district, it is indicated that some 1,500 miners will be working in the Yellowknife district by the end of 1948, not including employees of exploration companies. Experts in the matter estimate that allied town services will entail a population of some 4500 - 5000 people. On this basis, the population of Yellowknife would approximate 7000 - 7500 by the end of 1948, and possibly 8500 - 9000 by 1950.

Passing mention should be made of mining developments in the Athabaska Lake area. The Consolidated Mining and Smelting Company developed property at Goldfields, but with the beginning of the war the mine was closed and by 1943 Goldfields was deserted. In the district east of Goldfields various properties have been prospected and diamond drilled, but as yet no area has been found which warrants extensive developments.

### Lumbering

Dense forests border portions of the Mackenzie River. These forest areas usually consist of trees which seldom exceed 10" to 12" in diameter; the more common types being black pine, white spruce, poplar and jackpine.

Lumber for local use by sawmills in the Mackenzie basin is found principally at Grand Detour and Fitzgerald. Timber large enough for building purposes is found along the Mackenzie as far north as the delta and also along many of the smaller rivers to the east of the Mackenzie Valley.

No estimates of the amount of reserve timber in the Mackenzie district are available, but it is known that present cutting is having little effect upon available supplies. The following table shows the annual timber cut in the Mackenzie district for the past 10 years, the major portion of which came from the Slave River area:

Timber Cut in the Mackenzie District

Year	Board Feet	Linear Feet	Cords
1934	201,884	41,052	85
1935	341,644	23,923	5,589
1936	289,320	50,732	5,788
1937	364,253	66,940	5,683
1938	599,804	57,372	13,277
1939	946,743	38,108	12,167
1940	763,756	45,762	11,025
1941	1,012,826	82,079	9,760
1942	1,748,649	29,660	17,656
1943	1,760,863	27,230	18,594
1944	963,024	252,856	11,184

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The Liard Valley is heavily wooded with large blocks of merchantable timber, largely spruce, aspen and poplar. Since timber could be floated downstream to Fort Simpson and from there to the lower river posts, there is possibility of future timber developments in this area. Timber growing on the banks of the Liard River is similar in size and quality to that found along the Peace and Slave Rivers.

### Agriculture

Although agriculture is carried on to some extent throughout the Mackenzie district, the output of each district is barely sufficient to meet local requirements. The total amount of food imported into the Mackenzie district during 1943 probably exceeded 750 tons and this was supplemented by some 200 to 300 tons of locally produced game and cultivated food. Practically all of these imports entered by way of Edmonton and some 40 to 45% were shipped to Yellowknife.

The Mackenzie district probably produces about 160 tons of potatoes but also has to import an additional 40 to 50 tons. Flour is one of the largest single food imports of the Mackenzie district, its volume being in excess of 400 tons annually. The following table on the production and importation of food emphasizes the dependence of the white population upon imported foods:

#### PRODUCTION AND IMPORTATION OF FOOD: MACKENZIE RIVER BASIN 1943

Settlement	Potatoes		Flour Imported (tons)	Canned Vegetables Imported (cases)	Canned Meat Imported (cases)
	Produced (lb.)	Imported (lb.)			
Aklavik	2,000	30,000	75	400	250
Fort McPherson	1,000	5,000	25	40	40
Arctic Red River	2,000	2,000	7	10	25
Fort Good Hope	12,000	2,000	16	55	250
Fort Norman	22,000	0	20	15	250
Fort Wrigley	750	0	5	5	15
Fort Simpson	100,000	0	35	85	250
Trout River	30,000	0	3	-	12
Fort Providence	40,000	0	35	30	50
Hay River	12,000	0	10	50	100
Buffalo River	5,500	0	-	-	-
Fort Rae	1,200	2,000	15	63	165
Yellowknife	0	100,000	75	2,500	500
Snowdrift	0	1,000	5	25	20
Fort Resolution	27,000	0	-	-	-
Fort Smith	50,000	25,000	8	42	250
Fort Liard	10,000	0	7	15	75
TOTAL	315,450	187,000	341	3,315	2,252

(-) Dash indicates no information available





Cont'd...

Settlement	Fresh Vegetables Imported (lb.)	Fresh Domestic Meat Imported (lb.)	Eggs		Milk Imported (cases)	Butter Imported (lb.)
			Produced (doz.)	Imported (doz.)		
Aklavik	100,000	0	100	12,000	300	6,000
Fort McPherson	0	0	0	600	40	2,000
Arctic Red River	0	0	0	600	30	500
Fort Good Hope	0	0	0	3,300	85	1,600
Fort Norman	0	0	50	3,000	160	3,600
Fort Wrigley	100	0	0	210	12	400
Fort Simpson	2,000	1,200	800	4,500	145	3,800
Trout River	0	0	0	150	7	400
Fort Providence	0	0	150	1,500	40	2,000
Hay River	500	2,000	0	1,500	80	2,000
Buffalo River	-	-	0	-	-	-
Fort Rae	1,000	1,000	0	1,500	50	2,000
Yellowknife	3,750	80,000	600	15,000	1,000	25,000
Snowdrift	400	0	0	360	15	1,500
Fort Resolution	-	-	150	-	-	-
Fort Smith	1,000	12,000	1,200	4,500	100	3,000
Fort Liard	0	0	0	750	55	1,500
TOTAL	108,750	96,200	3,050	49,470	2,119	55,450

(-) Dash indicates no information available

The Mackenzie basin has, on a geographic basis, possibilities for the development of grazing and specifically the Hay River district appears to have most favourable characteristics in this respect. At Fort Smith and Fort Simpson experiments in cattle raising have been quite successful.

In the vicinity of the Mackenzie delta perpetual frost reaches very near the surface in summer and makes the raising of agricultural produce impracticable. Further south, however, excellent crops of garden vegetables are grown.

Oats and barley are raised as far north as Simpson and wheat has been successfully grown in this district. At Fort Vermilion, statistics show that wheat crops fail on an average of but three years in twenty-five. All of the south shore of Great Slave Lake may be considered as an area which lies within a possible wheat belt. On the Upper Liard River wheat, barley, rye, oats and garden vegetables are successfully grown. The climate is similar to that of Manitoba and wheat is a certain crop four years out of five.

Early freeze-up of the Mackenzie River, which commonly occurs in middle or late October, is one of the problems facing local sections which now produce a surplus of agricultural and garden products. Since the river boats are usually wintered at Fort Smith and the Mackenzie





route is long, the last boat going north passes Fort Simpson in late August and about the third week in September coming south. Therefore, excess produce must be ready for shipment at these times. The settlements on the south shore of Great Slave Lake and along the Slave River have better transportation connections to Yellowknife, the chief local market. Their more favourable geographic location is an advantage for future agricultural expansion.

The following table illustrates the present status of agriculture at the principal points throughout the Mackenzie district:

Gardens and Farms in Mackenzie Valley

Local Centre	Garden Acreage	Farm Acreage
Fort Smith	50	50
Fort Resolution	7	4
Snowdrift	0	0
Yellowknife	5	0
Fort Rae	2	0
Buffalo River	0	0
Hay River	8	0
Fort Providence	6	5
Trout River	5	0
Fort Liard	2	0
Fort Simpson	15	70
Fort Wrigley	1	0
Fort Norman	4	0
Fort Good Hope	4	0
Norman Wells	1	0
Thunder River	2	0
Arctic Red River	2	0
Fort McPherson	1	0
Aklavik	4	4
TOTAL	119	123

While acreage under cultivation is very little at the present time, this does not mean that larger tracts of suitable land do not exist. For example, the Liard River valley, southwest of Fort Simpson, has good agricultural possibilities. Between Nelson Forks and the Liard, it has been estimated that there are probably some 45,000 acres suitable for agriculture, the best of which are south of Fort Liard.

Oil

The presence of oil in the Mackenzie River valley has long been known, but the distance between source of supply and markets delayed, until recently, any attempt to develop it. The first attempt to exploit this natural resource was made during the summer of 1920 and a well with a daily output of 60 to 70 barrels was brought into production.



The Norman Wells oil field received considerable impetus with the development of the Canol Project whereby oil produced at Norman Wells was transported over a 686-mile pipe line to a refinery at Whitehorse. The line has a yearly average capacity of 3800 barrels per day. During the operation of this project, a total of 975,764 barrels of crude oil was delivered to Whitehorse. The refinery at Whitehorse has a minimum capacity of 3000 barrels per day.

Reports made by competent authorities indicate that the refinery and pipe line are of questionable value, even in the event of another emergency. Investigation has disclosed no known possibilities for their economic operation as a complete unit in the post-war period. There are unfavourable economic aspects such as the high cost of operation and maintenance and the limited capacity of the installations. Extremely restricted local market demands for petroleum products within the area to be served in peacetime, and the evident lack of balance between the output of specific products and the local demand for such products will, in all probability, preclude sale of this property for operation at Norman Wells. However, the quantitative potential of the Norman Wells field will be the major controlling factor in determining future action. At the present time it is quite certain that unless a large general field can be proven, no company will undertake the construction of a larger pipe line either to seaboard or to some other point to facilitate distribution. From the period of earliest developments to date, the proven area has only been expanded from 400 to 4,000 acres.

In addition to the activity within the Norman Wells field, some interest has been shown in the development of oil near Fort Nelson and Fort St. John; along the Peace River; and near Pine Pass.

#### Furs

In the year 1943, a total of 385,440 pelts, exclusive of red squirrel, and valued at \$3,165,107, was harvested in the Northwest Territories. This amount represents approximately 11% of the total value of fur production in Canada in 1943. From this standpoint, white fox pelts are the most important, followed by other types of fox, muskrat, marten, beaver, mink and lynx. The increase in the value of fur to more than \$3,000,000 is the result of an increase in the price of furs. The number of pelts taken in 1943 was actually less than that taken in 1942, when it was reported at 445,336.

The following table ranks the importance of each region in the production of pelts by various types in the Mackenzie district:



Principal Fur Areas of Mackenzie District

Place	Beaver	Marten	Lynx	Mink	Muskrat	Red Fox	Cross Fox	Ermine
Fort Smith	2	6	3	2	4	1	1	5
Fort Resolution	3	7	8	1	3	3	3	2
Fort Providence	6	8	2	6	5	5	7	1
Fort Rae	8	5	6	4	2	4	4	6
Fort Simpson	1	1	1	5	7	6	6	3
Fort Norman	4	3	4	7	8	7	5	7
Fort Good Hope	5	2	7	8	6	8	8	8
Aklavik	7	4	5	3	1	2	2	4

This table shows the significance of Simpson as a fine fur area since this section, which includes Liard and Wrigley, ranks first in the production of the more valuable furs, namely, beaver, marten and lynx. In total number of furs produced, Fort Smith ranks first; with the Resolution area, which includes the trading posts of Rocher River and Snowdrift, ranking second in importance.

Based on the average annual value of fur production, the Aklavik - Fort McPherson - Arctic Red River area is by far the most important section of the Northwest Territories. During the period 1938 - 1943, the average annual catch was valued at over \$500,000, of which muskrat and white fox constituted some 85% of the total. On a value basis, the other areas fall below an average of \$200,000, as indicated by the following table:

Average Annual Value of Fur Production

1938 - 1943

Aklavik	\$ 505,000
Resolution	198,000
Fort Smith	190,000
Simpson	175,000
Rae	140,000
Good Hope	90,000
Norman	90,000
Providence	87,000

1. The first part of the report is a general introduction to the subject.

2. The second part is a detailed description of the methods used.

3. The third part is a discussion of the results obtained.

4. The fourth part is a conclusion.

5. The fifth part is a list of references.

6. The sixth part is a list of figures.

7. The seventh part is a list of tables.

8. The eighth part is a list of appendices.

9. The ninth part is a list of footnotes.

10. The tenth part is a list of symbols.

11. The eleventh part is a list of abbreviations.

12. The twelfth part is a list of definitions.

13. The thirteenth part is a list of equations.

14. The fourteenth part is a list of figures.

15. The fifteenth part is a list of tables.

16. The sixteenth part is a list of appendices.

17. The seventeenth part is a list of footnotes.

18. The eighteenth part is a list of symbols.

19. The nineteenth part is a list of abbreviations.

20. The twentieth part is a list of definitions.

21. The twenty-first part is a list of equations.

22. The twenty-second part is a list of figures.

23. The twenty-third part is a list of tables.

24. The twenty-fourth part is a list of appendices.

25. The twenty-fifth part is a list of footnotes.

26. The twenty-sixth part is a list of symbols.

27. The twenty-seventh part is a list of abbreviations.

28. The twenty-eighth part is a list of definitions.

29. The twenty-ninth part is a list of equations.

30. The thirtieth part is a list of figures.



## 2. TRAVEL HABITS OF THE PEOPLE

### (a) Northern Alberta Area

#### Edmonton

On the basis of the Inter-Community Travel Survey, made in 1945, Edmonton has a relatively high frequency of inbound and outbound travel. Of travel to Edmonton, approximately 75% originates within the Province, 5% from each of Saskatchewan, Manitoba and British Columbia, and 4% from Ontario, 3% from the United States and the remainder divided almost equally among eastern Canadian provinces. Of travel from Edmonton, 75% is to points within Alberta, 15% to Saskatchewan, 3% to each of British Columbia and Manitoba, and the remainder divided among other Canadian provinces and the United States.

Thirty-one representative business concerns report a personnel of 176 travelling each month. Forty percent of such travel is within the Province, 45% within the three western provinces, 10% to eastern Canada and 5% to the United States. On the basis of method of travel, approximately 44% is by train, 30% by private car and 26% by air.

A division of reported business travel indicates that of the 31 firms, 11 have personnel travelling between Edmonton and points in northern Alberta, and 4 have personnel travelling between Edmonton and points in the Northwest Territories.

Thirteen firms report holding company functions in Edmonton. Ten of these, having a yearly average attendance of 235 people, draw wholly from within the Province, while three, having a yearly average attendance of 60 people, draw from western Canada.

#### McMurray

Approximately 66% of the travel to McMurray (where the airport serving Waterways is located) originates within Alberta, and of this amount some 75% originates at Edmonton. Of the remaining portion of inbound travel, 16% originates in Saskatchewan, 8% in British Columbia, 5% in Ontario, 4% in Manitoba, and 1% in Quebec.

Of the outbound travel, 60% is to points within Alberta, and of this amount approximately 65% is to Edmonton. Eighteen percent is to Saskatchewan, 10% to British Columbia, 7% to Ontario, 4% to Manitoba, and 1% to Quebec.

Eight business concerns in the McMurray district have a personnel of 32 travelling each month. This travel is almost wholly confined to trips to Edmonton and is on the basis of approximately 62% by air and 38% by rail.



Grande Prairie

The travel habits of the residents of Grande Prairie are largely local in nature. However, of the points at which such travel terminates, the most important is Edmonton. A review of hotel registrations for the year 1939 indicates that 504 people registered at Edmonton from Grande Prairie.

That the volume of this travel has increased is substantiated by testimony of Canadian Pacific Air Lines before the Board, which stated, "The traffic is continually growing, becoming heavier all the time between Grande Prairie and Edmonton. They do their business with Edmonton."

Peace River

Peace River is an active business centre for the district along the north side of the Peace River, and as such the majority of its travel is of a local nature. However, the pattern of travel has two important characteristics, since the larger portion occurs between Peace River and Grande Prairie, and the smaller portion between Peace River and Edmonton. Hotel registrations indicate the relative volume of the Peace River registrants at Edmonton, there being 359 people in 1939, or 0.7% of Edmonton registrations. In testifying as to the travel habits of the people of Peace River, Canadian Pacific Air Lines officials stated that "there is not sufficient business between Edmonton and Peace River to warrant (direct service). It requires a service (connecting with) Grande Prairie".

(b) Mackenzie Area

The type of travel existing in the Mackenzie area is in general of a different character to that which is found in the more populated sections of Canada; it is axiomatic that a small population scattered throughout a large area mitigates against any considerable volume of travel between individual communities. This tendency towards a minimum inter-community relationship is further increased by the fact that the great majority of northern communities function quite independently of one another. While it is true that there may be some tendency for relationships between two mining communities, yet the basic requirements of business, supplies, and to a large extent labour, are directly dependent upon the trade centre--which for the Mackenzie area is Edmonton.

Such local travel as does exist, however, is for the purpose of making connections with the transportation services, or is of an emergency nature. In general, this is the type of travel that exists between such points as Bitumont and McMurray; Embarras and Chipewyan; Fitzgerald and Fort Smith; Liard and Simpson; and, Hay River and Fort Vermilion.

The foregoing type of local travel should not be confused with that type which is usually characteristic of a developing mining area. The principal characteristic of this type of travel is a movement of passengers between a central community and numerous points in the





surrounding district where the prospecting, proving, developing and production stages of mining create an inter-relationship between the central point, which has the better transportation facilities, stores and government administration offices, and the outlying points. An example of this type of travel is that which exists between Yellowknife and the subsidiary points of Gordon Lake, Russell Lake and Slemmon Lake.

The principal type of regular travel existing in the Mackenzie area is that which relates to the area trade centre. All communities in the Mackenzie area are directly dependent on Edmonton. Not only are the exports of the Mackenzie area, but also all necessary imports, funnelled through Edmonton. Such commercial relations generate an important volume of business travel between Edmonton and the individual communities.

In addition, there is some travel, relatively small in volume because the population is small, originating in the northern communities and terminating at Edmonton. Some indication of the quantum and distribution of this travel may be drawn from the hotel registrations at Edmonton, which for the year 1939 were as follows:-

Chipewyan	8
Fort Smith	18
Great Bear Lake	2
Hay Lakes	97
Yellowknife and N.W.T.	265

As important mining developments have a far reaching effect throughout Canada, there is an attraction for business travel from such distant places as Vancouver, Winnipeg, Toronto and Montreal, but this type of travel has not yet reached large proportions; it is almost wholly confined to movement between the pivotal point, Edmonton, and such outlying points as Yellowknife, Port Radium and Norman Wells.

### 3. TRANSPORTATION REQUIREMENTS

The impetus of the war not only served to hasten the adoption of improvements to water services throughout the Mackenzie area, but also served to increase the capacity of the carriers' facilities. As long as the northern communities remained small and scattered, larger capacity was not economically feasible, but with the development of the Norman Wells and Yellowknife districts the requirements for large shipments of freight and supplies made it possible for large capacity operations to be conducted in a more economical manner. At the present time, it is believed that with the reduction in the volume of shipments to Norman Wells, the facilities and services now existing are generally capable of meeting the prospective needs of the Yellowknife district. As noted under the section on surface transportation facilities, an improvement in water transportation on Great Slave Lake between Hay River and Yellowknife may be required as a result of the construction of the Grimshaw-Hay River highway.

Requirements of the water carrier facilities serving points other than Yellowknife have not undergone any significant change during the last few years, and present day services are considered adequate to

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meet their future requirements for bulk transportation. The most important requirement for water transportation is improvement in the waterways themselves. Increasing difficulties of transport due to low water require that portions of the route be dredged; an undertaking which is the responsibility of the Federal Government.

As Yellowknife develops and its population increases, the local market will be expanded and there will be an increased demand for a diversity of imports. In many instances, this will mean that goods will be shipped in relatively small quantities, as compared with the seasonal water-borne shipments, and will require a more expeditious service than the water carriers can supply. While it is true that some of these shipments could and may be transported by air, yet to establish low prices and volume marketing in Yellowknife will necessitate lower transport charges than air service can presently afford to provide. This intermediate future type of traffic appears to be taken care of by the construction of the Grimshaw-Hay River highway.

Air services in a frontier district serve somewhat different requirements than those which exist in the more populated areas and it is possible to distinguish generally between three types of services. The first type is a regular service with frequencies comparable to main line operations. To maintain the necessary volume of traffic for this type of service requires a relatively large concentration of population and a substantial community of interest with the principal trade centre. However, because of the low density of population in the Mackenzie area, the traffic volume may not be so high as in cases where service joins relatively large centres of population; this may be offset, either wholly or in part, by the fact that no other method of transportation exists, or is reasonably convenient. The principal points in the Mackenzie area which meet this criterion and require a regular and frequent service by air are Grande Prairie, Peace River, McMurray, Fort Smith and Yellowknife.

The second type of service is one which serves communities which generate a lesser volume of traffic, yet service to such places is almost in the nature of a necessity. On the one hand there is a certain necessary movement of government employees connected with meteorological and radio services, the Department of Transport, police and administrative duties. Their travel is in the interest of Canada as a whole, and a service reasonable under the circumstances must be maintained. On the other hand, it is not economically feasible to attempt to serve communities of this type under charter or non-scheduled arrangements because the people in the surrounding area must know the date, or approximate date, on which aircraft will arrive and depart. In portions of the Mackenzie area, the lack of telegraph and radio facilities at many of the outlying points requires that people know from four to six months in advance the schedule of the service. Therefore, the type of operation must be of a regular nature, although the frequency of service may be very low. Communities which require a service of this nature include Resolution, Hay River, Providence, Simpson, Fort Norman and Norman Wells. Other communities which also require a regular service, but on a still lower frequency than the foregoing, are Good Hope, Arctic Red River, McPherson, Aklavik along the Mackenzie River; Fort Rae, Cameron Bay and Coppermine in the Great Bear Lake area; and Goldfields, Camsell Portage, Fond du Lac and Stoney Rapids in the Lake Athabaska area.



In addition to the above two types of service, there are communities which, from the standpoint of traffic volume and requirements of service, can be adequately served by charter operations. Communities which require this type of service include Bitumount, Rocher River, Taltson River, Liard, Nelson Forks, Fort Nelson and Gordon Lake.

There are some points in the Mackenzie River area which at the present time do not require any air service whatsoever. Lac la Biche is now served by rail and highway facilities; North and South Wabiskaw Lakes are now served by road to the railway at Slave Lake; Fitzgerald, which is 16 miles from Fort Smith, can be satisfactorily served by the air facilities at Fort Smith; and Outpost Island, where the mine has ceased operation and people have moved away, do not require an air service.

With regard to charter air services in a mining area, it is important to realize that they are most highly utilized during the stages of prospecting and developing, because the requirement is for the movement of individuals or small groups of people and small quantities of supplies, usually over short distances, and to a great number of separate localities. Then as a mining area becomes established within definite limits, and as the mines reach a production stage, the requirement becomes one for the movement of larger quantities of supplies and equipment and a more frequent passenger service for the personnel. This change in requirements tends to lessen the demand for charter services, performed by small aircraft at a high cost, and tends to increase the demand for a regular service provided by larger aircraft at reduced cost per transportation unit.

#### 4. AIR TRAVEL POTENTIAL

##### (a) Northern Alberta Area

The air travel potential of McMurray, Grande Prairie and Peace River is primarily dependent upon the community of interest existing between them and Edmonton. As noted under the section of the general review of the area, their principal commercial relations are with Edmonton. While they have connecting rail services, and, with the exception of McMurray, connecting highway services, the time factor in air transport is important towards increasing the present volume of air traffic. In the view of officials of the Canadian Pacific Air Lines, the present and increasing volume of traffic between these points and Edmonton does warrant the operation of a regular service. Based upon present available data, it is indicated that the potential volume of this air traffic in the reasonable future will largely depend upon the extent of surface carrier competition and the general level of airline rates.





(b) Mackenzie Area

Within the Mackenzie area, the air travel potential is closely allied with the development of mining. At the present time, the main impetus to increasing traffic volume rests upon mining expansion in the vicinity of Yellowknife. The economic factors previously reviewed in this section of the report indicated the extent to which this mining area has developed a community of interest with Edmonton. As evidenced by the statistical review, the growth in this traffic has been such that it sustains the major portion of the Mackenzie area services. Indirectly, it provides air service to intermediate route points which by themselves would not contribute enough traffic to warrant a regular service; by combining the traffic generated at intermediate points with that moving over the main route, an operation based on a limited population becomes economically and financially feasible. In this manner secondary points receive a high degree of service which, in turn, tends towards a rapid development of their maximum traffic potential.

Throughout the Mackenzie area, where distances are relatively great, and convenient year round surface transport does not exist, the necessity for air service is often greater than in other parts of the country served by adequate surface facilities. In a frontier district the type of economic activity supporting a community influences to a greater extent the possible volume of air travel than it would in other more populated sections of Canada. The statistical review which follows immediately indicates that communities whose main economic activity is fur trading do not generate a volume of traffic comparable to that generated by mining communities of the same size. Essentially this is due to the fact that the fur industry is on a yearly cycle, with consequently small volume of travel, while a developing mining area is on a monthly, if not daily, cycle, and the volume of traffic generated is many times greater than in the case of the community based on the fur trade.





SECTION 7

STATISTICAL REVIEW

Prior to the compiling of separate statistical report by divisions, which was instituted by the Air Transport Board as of July 1, 1946, statistical data were not compiled by the carriers separately for the area under review. However, for the three years, 1943, 1944 and 1945, the inclusion of statistics for licence numbers 32, 38, and 85 does not invalidate the general trend of revenues and expenses which were reported as follows:

<u>Year</u>	<u>Operating Revenues</u>	<u>Operating Expenses</u>
1943	\$1,834,515	\$1,643,746
1944	1,902,467	1,872,291
1945	1,586,450	1,378,078

Considering that the statistical reports for the last six months of 1945 do not include licences 32, 38 and 85, the general reduction in revenues and expenses in 1945 compared to 1943 and 1944 is not indicative of a reduced level of performance in the Mackenzie area.

The general level of revenues has, year by year, maintained a reasonable margin over operating costs, the operating ratios being 89.6%, 98.4% and 86.8%, and the net operating revenues being \$190,769, \$30,176, and \$208,372, respectively. These favourable operating results are a direct reflection of increased passenger traffic throughout the district, as evidenced by the fact that the number of revenue passengers carried increased from 6,907 in 1943 to 14,499 in 1945, and passenger revenues over the same period increased from \$804,761 to \$1,034,069. The general increase in the volume of passengers, and the resulting high level of passenger revenues, has been sufficient to off-set a general reduction in goods revenue and the ton-miles of goods traffic; the general trend of which is indicated by the following table:

<u>Year</u>	<u>Revenue Goods Tons</u>	<u>Revenue Ton Miles</u>	<u>Goods Revenue</u>
1943	444	287,097	\$691,208
1944	532	378,456	570,847
1945	563	196,307	287,847



Although the actual weight of goods transported increased somewhat during this three year period, the average haul decreased from 647 miles in 1943 to 349 miles in 1945, which in turn reduced the revenue obtained from goods.

Statistics on mail traffic in the Mackenzie area over the same three year period show a decreasing tendency on a weight and ton mile basis as well as on a revenue basis.

<u>Year</u>	<u>Revenue Pounds</u>	<u>Mail Ton Miles</u>	<u>Mail Revenue</u>
1943	549,370	124,876	\$279,714
1944	320,360	123,893	239,297
1945	293,527	90,844	213,133

Although mail revenues have decreased during this period, their rate of decrease has not been proportional to the decrease in the volume of mail carried. This is due to the fact that mail payments are based on a per mile rate with a load limit for a given number of trips per year. For instance, between Edmonton and McMurray, a distance of 235 miles, the rate is 40¢ per mile with a load limit of 800 pounds on a schedule of 4 round trips per week; and between McMurray and Fort Smith, 280 miles, and Fort Smith and Yellowknife, 239 miles, the rate is 50¢ per mile, and the load limit 1,000 pounds, on a schedule of 4 round trips per week.

Basing statistical estimates for the year 1946 upon nine months of actual operations and three months of projected operations, it is indicated that the operating revenues for 1946 will be \$1,856,421 and the operating expenses \$1,664,800. This will maintain the general margin between revenues and expenses as evidenced during the years 1943 to 1945, the estimated net revenue for 1946 being \$191,621. The 1946 estimate of passenger traffic is 18,360 which also follows the upward trend as established by the three previous years. The estimates for mail and goods carried indicate a substantial increase over the years 1944 and 1945, being 427,879 pounds for mail and 1,709 tons for goods.

The importance of the various communities in the Northern Alberta and Mackenzie River areas, from a revenue and traffic producing standpoint, is indicated by the following table for the year 1945 and 6 months of 1946; wherein the revenue shown is the total earnings at each station irrespective of the ultimate destination of the traffic.



STATION EARNINGS

NORTHERN ALBERTA AND MACKENZIE RIVER AREAS

Station		Revenue	Passengers	Goods
		\$		
Aklavik	1945	17,677.49	73	9,515
	1946 (6 months)	18,716.99	69	13,982
Arctic Red River	1945			
	1946 (6 months)	1,687.49	14	622
		542.86	7	826
Bitumont	1945			
	1946 (6 months)	344.50	31	-
		310.30	20	1,444
Camsell Portage	1945			
	1946 (6 months)	760.31	14	481
		484.19	13	244
Carcajou	1945	26.00	1	-
	1946 (6 months)	20.00	1	-
Coppermine	1945	4,080.42	18	684
	1946 (6 months)	-	-	-
Edmonton	1945	515,027.07	3,487	217,663
	1946 (6 months)	300,174.86	2,481	180,235
Embarras	1945	149.24	3	435
	1946 (6 months)	727.01	12	3,058
Fond du Lac	1945	1,729.45	24	191
	1946 (6 months)	742.95	16	40
Fort Chipewyan	1945	3,840.40	97	4,221
	1946 (6 months)	2,305.36	73	2,477
Fort Fitzgerald	1945	-	-	-
	1946 (6 months)	7.48	-	22
Fort McPherson	1945	1,827.13	19	2,680
	1946 (6 months)	1,620.39	26	2,337





Continued.....

Station		Revenue	Passengers	Goods
Fort McMurray	1945	80,194.22	598	119,371
	1946 (6 months)	45,272.07	387	87,213
Fort Good Hope	1945	938.58	13	455
	1946 (6 months)	2,159.66	11	436
Fort Lizard	1945	-	-	-
	1946 (6 months)	15.00	-	30
Fort Norman	1945	2,360.12	12	1,249
	1946 (6 months)	3,556.56	41	452
Fort Providence	1945	2,910.37	45	689
	1946 (6 months)	1,734.26	15	764
Fort Rae	1945	690.14	8	4,848
	1946 (6 months)	504.10	13	290
Fort Resolution	1945	6,492.10	117	2,151
	1946 (6 months)	6,437.24	126	2,920
Fort Simpson	1945	9,111.39	54	4,054
	1946 (6 months)	6,141.90	39	2,612
Fort Smith	1945	55,167.67	645	39,508
	1946 (6 months)	19,821.52	259	14,570
Fort Vermilion	1945	4,288.50	147	4,108
	1946 (6 months)	1,689.90	54	1,673
Fort Wrigley	1945	527.51	4	316
	1946 (6 months)	1,281.95	9	623
Gold Fields	1945	364.25	9	-
	1946 (6 months)	75.00	1	-
Grande Prairie	1945	33,966.00	1,612	347
	1946 (6 months)	14,336.00	692	340
Hay River	1945	2,581.63	22	2,225
	1946 (6 months)	1,800.95	16	1,970
Keg River	1945	27.04	1	8
	1946 (6 months)	93.00	5	20



Continued.....

Station		Revenue	Passengers	Goods
Norman Wells	1945	164,609.27	988	23,043
	1946 (6 months)	36,536.51	233	4,301
Peace River	1945	2,765.04	136	1,727
	1946 (6 months)	2,010.30	61	1,820
Port Radium	1945	7,995.46	48	6,830
	1946 (6 months)	1,517.33	10	717
Rocher River	1945	662.98	9	792
	1946 (6 months)	24.96	-	52
Stony Rapids	1945	1,307.95	8	2,113
	1946 (6 months)	576.10	6	796
Wabiskaw	1945	-	-	-
	1946 (6 months)	35.00	1	-
Yellowknife	1945	131,039.27	1,161	39,593
	1946 (6 months)	81,223.55	854	26,239
TOTALS.....	1945	1,055,148.99	9,418	489,919
	1946 (6 months)	552,494.75	5,251	352,503

With the exception of Edmonton, which includes revenue received from passengers and goods not terminating in the Mackenzie area, the above statistics indicate the relative importance of the various communities served.

For the year 1945, Norman Wells, Yellowknife, Fort McMurray and Fort Smith were the principal revenue producing stations in the Mackenzie area. Comparing the 6-month trend for 1946 with the 12-month trend for 1945 indicates that Norman Wells has decreased approximately 50% in importance; that Yellowknife has increased approximately 10% and Fort Smith has decreased approximately 15%. Although the absolute volume of their business is relatively small, the 1946 trend indicates almost a doubling in revenues for such points as Aklavik, Bitumont, McPherson, Fort



Good Hope, Fort Norman, Resolution, Wrigley, and Peace River. Other points such as Providence, Rae, Simpson, Hay River and Radium have, from a revenue standpoint, remained relatively constant while still others such as Arctic Red River, Coppermine, Fort Vermilion and Rocher River show a decreasing trend in 1946 as compared with 1945.

The foregoing review of each locality's traffic indicates that certain points are important from the standpoint of scheduled air service. McMurray, Fort Smith and Yellowknife are among the most important points in the Mackenzie area. These points have a high community of interest with Edmonton and to some extent with each other. This contributes towards the maintenance of relatively high and constant route traffic as indicated by the following table:-

TRAFFIC AND REVENUES

BY ROUTE SEGMENTS

Between:	And:	MILES	<u>PASSENGERS</u>		<u>GOODS</u>	
			No. of Passengers 1946 (6 mos)	Passenger Revenues	Pounds of Goods 1946 (6 mos)	Goods Revenue
Edmonton	McMurray	232	2,987	\$90,088	173,180	\$20,789
McMurray	Fort Smith	235	2,783	85,021	235,436	28,562
Fort Smith	Resolution	99	2,509	32,291	204,711	10,401
Resolution	Yellowknife	92	2,547	30,462	197,298	9,381

the decline in revenues from passengers and goods over each route segment is due to the variations in mileage.

Relative to the total volume of business originated in the Northern Alberta and Mackenzie River areas (excluding the base station Edmonton) the three principal points are McMurray, Norman Wells and Yellowknife. For the first 6 months of 1946 their average monthly revenues have been \$7,500, \$6,000, and \$13,500 respectively. As a group they contribute 65% of the operating revenues, 48% of the passenger traffic and 68% of the goods traffic originated within the Northern Alberta and Mackenzie River areas.

Localities which may, from a traffic standpoint, be considered in a secondary group, with average monthly revenues approximating \$3,000, include Fort Smith, Grande Prairie and Aklavik. Relative to total originated business these three communities contribute 21% of operating revenues, 33% of the passenger traffic, and 17% of the goods traffic.





A third group may be distinguished having average monthly revenues varying between \$300 and \$1,000. These localities, in decreasing order of importance, include Fort Resolution, Fort Simpson, Fort Norman, Fort Chipewyan, Fort Good Hope, Peace River, Hay River, Fort Providence, Fort Vermilion, Fort McPherson, Port Radium, and Fort Wrigley. As a group they contribute 13% of operating revenues, 16% of the passenger traffic and 11% of the goods traffic.

A fourth group, having average monthly revenues of approximately \$100 per month and less originate an almost negligible portion of the total volume of traffic. This group includes Arctic Red River, Bitumont, Camsell Portage, Carcajou, Coppermine, Embarras, Fond du Lac, Fort Fitzgerald, Fort Lizard, Fort Rae, Goldfields, Keg River, Rocher River, Stony Rapids and Wabiskaw. Relative to the total volume of originated business, this group contributes but 1% of the operating revenues, 3% of the passenger traffic and 4% of the goods traffic.

The above division of communities on a traffic statistics basis indicates that the points which can support a regular and frequent air service are primarily McMurray, Yellowknife and Norman Wells, and secondarily Fort Smith, Grande Prairie and Aklavik.

Those communities which statistics indicate as requiring a regular service but at a reduced frequency are Fort Resolution, Fort Simpson, Fort Norman, Fort Chipewyan, Fort Good Hope, Peace River, Hay River, Fort Providence, Fort Vermilion, Fort McPherson, Port Radium and Fort Wrigley. Because of its geographic situation on the Mackenzie route, Arctic Red River might also be included in this classification although not warranted on a strict traffic basis.

To meet the irregular requirements for air service at North and South Wabiskaw Lakes and Bitumont, a charter service based at McMurray would be sufficient. Similarly a charter service based at Fort Smith or Chipewyan could serve the Athabaska Lake area and the Rocher River district. Gordon Lake can be adequately served from Yellowknife. Liard, Nelson Forks and Fort Nelson may be served either from Fort Simpson or Dawson Creek. Keg River, Carcajou and Red River may best be served by charter operations at Fort Vermilion, but could, if necessary, be served from a base at either Peace River or Chipewyan.



Section C

Synopsis of Public Hearing at Edmonton

A public hearing by the whole Board was held in the Court House, Edmonton, Alta., on Tuesday, October 8th, at which the following parties were represented:-

Canadian Airways Limited	)	
Licences C.T.C.(A.T.)27 and 28	)	
	)	
MacKenzie Air Services Ltd.	)	represented by D.R. McNeil K.C.
Licences C.T.C.(A.T.)33, 34, 43,	)	and J.F. Clark, Counsel for
44 and 63	)	Canadian Pacific Air Lines Ltd.
	)	
	)	
Yukon Southern Air Transport Ltd.)	)	
Licences C.T.C.(A.T.)68	)	
	)	
Northern Flights Limited	)	
Peace River Northern Airlines Ltd.)	)	represented by J.H. Ogilvy
	)	
Associated Airways Ltd.	)	represented by F.A. Ford, K.C.
Charter Airways Limited	)	
	)	
Citizens of Aklavik, N.W.T.		petition to the Board.
Licences under review - C.T.C. (A.T.) 27, 28, 33, 34, 43, 44, 63 and 68.		

Representations by Licencees

Canadian Pacific Air Lines Ltd., representing its subsidiaries Canadian Airways Limited, Mackenzie Air Services Ltd., and Yukon Southern Air Transport Ltd., testified that the licencees lay no claim that the licences under review have been operated individually and separately, nor do they pretend that the pattern of licences best meets the requirements of the present and future public convenience and necessity. On the contrary, the representative of the licencees brought testimony to show that the operations conducted under the licences under review have been an amalgamation of the operations of 3 different companies, and that Canadian Pacific Air Lines has, to some extent and in some respects, anticipated the Board's review by establishing a



pattern of air services which, according to the experience of the carrier, would meet the public convenience and necessity to the greatest extent possible, having regard to the ground facilities, the flying equipment available and the exigencies of the war. The licencees represented that the pattern of air services which has been evolved can be defended on its merits subject to certain modifications.

Dealing with the route from Edmonton via the Athabasca and Slave Rivers to Yellowknife, N.W.T., the licencees represented that this is a traditional route for surface transportation and, consequently, permanent communities have been established which now require scheduled air service of a reliable and frequent nature, the Town of Yellowknife itself being of such importance that it necessitated a frequency of one daily or better. Licencee testified that the following points along the route should be regularly served by the same equipment that serves Yellowknife:- Edmonton, McMurray-Waterways, Fort Smith-Fitzgerald, and Resolution.

With respect to the points around Lake Athabasca, the licencee testified that, owing to the shutting down of the mining camp at Goldfields, the traffic from this region had dwindled to small proportions and could be adequately served by such type aircraft operating from the railhead at McMurray. As this service would require a frequency of once a week, it should be operated by a carrier who also conducts charter operations.

Respecting the route from Yellowknife to Coppermine, the licencee expressed the opinion that scheduled service of a comparatively low frequency is required to Rae, Fort Radium and Coppermine. He stated that the necessity for operating on schedule to many of the points in the far north arises from the fact that the people served live great distances away from the focal points and, consequently, they must know the dates on which they may expect air service; otherwise the traffic potentialities seldom justify scheduled service. In connection with this route, licencee stated that Indin Lake has become a centre of great activity and will require scheduled air service which could best be rendered by the same operator that serves the Coppermine route.

Dealing with the Mackenzie River route to Aklavik, N.W.T., licencee represented that, during the war, this route was materially improved by the provision of landing strips as far north as Norman Wells, and that the public convenience required a regular service by landplane as far as Norman Wells having a greater frequency than the segment from Norman Wells to Aklavik, which must be served by bush type aircraft. He said that the





following points require a frequency of twice a month or better: Hay River, Providence, Simpson and Norman Wells - Wrigley being relatively unimportant but, being on the route, should be served at the same time. The licensee testified that there is no interest for scheduled service between Simpson, Liard and Nelson Forks, and such a service has never been operated.

Turning to Licence 63, the licensee stated that the route from Peace River via Fort Smith to Yellowknife had never carried much traffic, that there is little community of interest between Peace River and Fort Smith, that Keg River and Carcajou can be adequately served by surface transport on the Grimshaw-Hay River highway, and that there was never enough traffic at Red River to justify scheduled service.

Concerning Licence 68 from Edmonton to Whitehorse, the licensee represented that the route is being served by a daily operation of a main line type as far as Whitehorse, Y.T., where communication is made with the international segment to Fairbanks, Alaska, and the branch line to Dawson and Mayo. He stated that there is no necessity for scheduled service at Teslin, Y.T., and little traffic at Watson Lake, but that the other points on the route all require regular scheduled service provided that Dawson Creek be considered as adequately served at Fort St. John, to which it is connected by a good highway and where junction is made with the route to Vancouver.

The licensee stressed particularly the necessity for high-class service to the two main communities of the Peace River District, Grande Prairie and Peace River, saying that, while there is no justification for a separate service between Peace River and Edmonton, a first-class service offering up to 9 round trip schedules per week could be justified by combining Peace River traffic with that of Grande Prairie on the main line.

Dealing with desirable modifications to the existing pattern, licensee went on to explain that, in his opinion, a regular scheduled service between Peace River and Yellowknife via Fort Vermilion and Hay River is required for the reason that Peace River is well served by a daily rail service from Edmonton, and that passengers, express and freight moving by rail overnight to Peace River are placed 250 odd miles nearer to Yellowknife. Furthermore, a considerable quantity of the products of the Peace River District would find a ready market in Yellowknife and to the north. In the opinion of the licensee, the



completion of the Grimshaw-Hay River highway would contribute to, rather than detract from, the traffic potential for the service he proposes. A further argument presented by the licensee in favour of the proposed service was the providing of a more direct communication between the Northwest Territories and the Peace River District to Vancouver, and he suggested that this might even justify a direct route between Grande Prairie and Prince George, B.C. Licensee stated that the establishment of a route from Peace River to Yellowknife would not detract from the route from Edmonton via Waterways to Yellowknife, but that the two somewhat parallel routes should be operated by one carrier in order to achieve best economy in the utilization of personnel and equipment.

Representations made by other parties

THE CITIZENS OF AKLAVIK presented a petition with 64 signatures, to the effect that the service at the northern posts along the Mackenzie River was inadequate and inconvenient, and that the fares are so high as to make the service unattainable to many of the residents of the north.

J. H. OGILVIE, representing Northern Flights Limited and Peace River Northern Air Lines Limited, made no specific representation to the Board, but endeavoured, by cross-examination of licencees' witnesses, to show that service between Grande Prairie and Peace River on Licence #68 had only recently been instituted, subsequent to application by his principals for licence to render air service between Edmonton and Peace River and Peace River and Yellowknife.



SECTION 9

SUMMARY

From a review of the economic characteristics of the area; the available statistical data pertaining to existing air services subject to the review, and having regard to the nature, extent and frequency of the railway, highway and water transportation facilities which are presently available for the service of the public concerned in the area, it would appear that the undermentioned commercial air services would be satisfactory and would adequately meet the present needs of the communities involved.

(a) A commercial air service (scheduled) of relatively high frequency, serving points which the economic analysis shows to be the principal points on the waterway route to Yellowknife. The principal points are Edmonton, Fort MacMurray, Fort Smith and Yellowknife. This service should be performed by multi-engined aircraft of the medium airline type.

(b) A commercial air service (scheduled) of low frequency, to provide reliable and predictable air service to communities such as Yellowknife, Rae, Indian Lake, Cameron Bay, Coppermine. This service might be performed initially by using "bush type" aircraft operating as seaplanes or skiplanes, but probably will develop into a combination operation of landplane to Cameron Bay and "bush type" from Cameron Bay to Coppermine.

(c) A commercial air service (scheduled) of moderate frequency to serve the undermentioned points and provide a direct air service to Vancouver from the North West Territories. The points are Yellowknife, Hay River, Vermilion, Peace River, Grande Prairie, Alta.; and Prince George, B.C. This service should be performed by multi-engined aircraft of the medium airline type.

(d) A commercial air service (scheduled) of moderate frequency, connecting Edmonton and Grande Prairie with the Northwest Staging Route at Fort St. John. The service will be referred to under Group V. The service referred to in this paragraph should be performed by multi-engined aircraft of the medium airline type.

(e) A commercial air service (scheduled) of low frequency, to provide reliable and predictable air service to communities such as Fort Smith, Hay River, Simpson, Wrigley, Norman Wells, Good





Hope, Arctic Red River and Aklavik. This service might be performed initially by using "bush type" aircraft operating as seaplanes or skiplanes, but probably will develop into a combination land and bush type as far as Norman Wells, and bush type from Norman Wells to Aklavik.

(f) A commercial air service (non-scheduled) based at Fort McMurray to serve the communities in the Lake Athabasca area including Fond du Lac and Stony Rapids.

1. The first part of the report is devoted to a general description of the project and its objectives. It also includes a brief review of the literature on the subject.

2. The second part of the report describes the methodology used in the study. This includes a detailed description of the experimental design, the subjects, and the data collection procedures.







